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DIAGNOSIS AND TREATMENT OF TUBERCULOSIS *

O. W. McMICHAEL, B.A., M.D.

(Associate Professor of Medicine, Chicago Polyclinic.)
CHICAGO, ILL.

I deem it an honor and privilege to be invited to address this association upon the subject of diagnosis and treatment of tuberculosis. I recently heard a speaker apologize to his audience for addressing them upon "so hackneyed a subject," but I hope none will consider tuberculosis a "hackneyed" subject until it has become as rare as smallpox, and I am optimistic enough to believe it will become so—when medical men awake to a new conception of the problem and realize that since more people die of tuberculosis than of all other causes combined, then certainly a much larger proportion of their patients suffer from tuberculosis than they hitherto suspected.

Let us get it firmly fixed in our minds that nearly all adults have some tuberculosis and it is not a question of whether the individual has or has not a tuberculous infection but rather what is his tuberculosis doing to him. Are the tubercle bacilli which are present in the body living and multiplying or are they held as prisoners in some latent focus where they may remain harmless throughout the life of the individual?

EARLY DIAGNOSIS.

In all discussions of the methods of combating tuberculosis there is a unanimous agreement that early diagnosis will do more than anything else to curb the disease. But before we can get far in this direction we must completely change our conception of what early diagnosis means, and instead of considering our diagnosis early when we have determined that our patient is suffering from active pulmonary phthisis let us awake to the realization that this is late diagnosis, and that most of the cases said to be "predisposed to" tuberculosis, or to have "latent" tuberculosis if carefully studied are really active cases.

The most common mode of infection is by inhalation; the majority of the bacilli fall upon

the mucous membrane of the nose and throat, and only a few are carried beyond the trachea. They then pass through the mucous membrane, without producing local lesions, into the lymph spaces where they are seized by the leucocytes and carried to the neighboring lymph-nodes.

If the bacilli are especially virulent or if too many bacilli have been seized by a single cell the leucocyte dies, and the cell and its contents are taken up by the endothelial cell which disintegrates the dead leucocyte, but having no power in itself to destroy the bacilli they are set free, and traveling through the lymph channels into the thoracic duct pass into the blood stream where they are clumped by the agglutinins and form minute thrombi which lodge in the small terminal blood vessels in the lungs. There when they find lodgment, they are again surrounded by the leucocytes and the tubercle is formed.

In the tubercle we have living bacilli which may multiply and secrete toxic substances which can escape from the tubercle, while the bacilli themselves remain prisoners.

These toxic substances have the property of converting body fat and protein into food for the bacilli, and when produced in abundance destroy body tissues to such an extent that it is necessary for the patient to consume more food than the normal individual, to supply this waste and perform the normal functions.

It is necessary to differentiate sharply between the toxemia of the development stage or what might be called the prodromal stage of tuberculosis, and that of active disease. It must be recognized that this prodromal period may extend from infancy to middle life, and the symptoms be so slight as to be recognized only upon the most careful study, and that there may be long intervals during which there is no tangible evidence of anything abnormal. This is best studied in children. The mother may notice that the child has stopped growing, that he tires easily yet looks well. He lacks enthusiasm in his play, lags behind the others in school, is bright enough but won't apply himself and is accused of being lazy. His shoulders droop and he doesn't stand erect. Ergograph tests show that his muscular ability may be normal for the first

* Read before the Section on Medicine, Mich. State Medical Society, 48th Annual Meeting held in Flint, Sept. 4-5, 1913.

part of the test period but falls away quickly and that the total work of his muscles for the whole test is half that of the normal child.

In adults like symptoms appear. Blood pressure will average ten mm. of mercury below normal for the age and sex of the individual. Extreme weariness follows slight exertion. They are "tired all the time" as they often say. Nervousness, nervous breakdown, digestive disturbances, depression of spirits, cold hands and feet and lack of appetite. It is characteristic of the digestive disturbances of tuberculosis, that they do not respond to the usual remedies. Slight enlargement of the thyroid with mild tachycardia, resembling Graves' disease is often noted. These disturbances are so slight that a physician is rarely consulted except perhaps for "stomach trouble" or a "tonic" is requested because the patient is "all run down" and the suspicions of the physician as to real nature of the trouble are not aroused.

A slight aggravation of these symptoms may persist for a year or more before anything tangible develops. Then begins the loss in weight, a slight hacking cough, the patient has a series of colds, or frequent attacks of "the grippe"; then he asks his physician what is wrong, and for the first time a systematic examination is made.

Having once suspected that tuberculosis may have something to do with the patient's condition, the question arises as to how we shall proceed to discover whether the patient has a tuberculous infection, keeping clearly in mind the difference between tuberculous infection and tuberculosis as a clinical entity.

TUBERCULOUS INFECTION.

Tuberculous infection occurs most frequently in childhood, though it may occur at any age, and let me say just here that the sooner we discard all notions of heredity, the sooner will we arrive at a truer conception of the disease.

Every case of tuberculosis comes from some other case of tuberculosis, and we should make a definite effort to trace every case to a probable source. While we will be often disappointed in discovering the source of infection, persistence in our investigations will usually be rewarded by the discovery that the infected person frequently visited, or was closely associated with some one who was an open case.

So common has it been in my experience to find tuberculosis in roommates and friends of tuberculous individuals and so strong are my convictions in this direction, that I venture to lay down the axiom that when you find a person suffering from tuberculosis, you will find one or more of the close associates infected. In nearly four thousand cases of which I have record more than seventy per cent. of those

who were in close contact with open cases show evidence of infection.

Inquiry regarding tuberculosis in other members of the family will be very often met with prompt denial, but the physician can draw his own conclusions from the patient's description of the last illness and previous health, of those who died of pneumonia or any wasting disease. Much significance can be attached to several small children in the family having died of convulsions, as suggesting possible tuberculous meningitis. Such cases are not sources of infection, but they suggest a possible common source of infection. Often the true source of infection is little suspected. I have in my care a family of seven. Mother, two daughters, the husband and three children of one of the daughters. The two daughters had active tuberculosis, the husband and three children show evidence of tuberculous infection, but none of the six is an open case. The mother—apparently the only healthy one in the family, is a rugged-looking woman of sixty-five, and for a long time she refused examination because she was not sick. Examination revealed a moderate involvement of the right apex with a small cavity, showing no signs of activity. Cough and expectoration were denied, but after persistent effort a specimen of sputum was obtained and found to contain tubercle bacilli.

Much importance may be attached to pneumonia, pleurisy or bronchitis in the history of the patient, while in children, measles and whooping cough are frequently followed by tuberculous activity, usually in the glands.

PHYSICAL EXAMINATION.

Evidence of exposure to infection having rendered it necessary to make a physical examination, this should be undertaken with great care, and should preferably be made at several sittings before a definite opinion is expressed.

It is not my purpose to discuss in detail the technic of physical examination, but in teaching I find that the average physician looks for pronounced symptoms, and does not attach sufficient importance to the slight departures from the normal which are of the utmost significance in making an early diagnosis.

However skilled we may be in making physical examinations, we are always confronted with the possibility that these slight departures from the normal may be produced by other causes, but we have in the various tuberculin tests, when properly interpreted, absolutely safe and dependable means of deciding the question.

In November, 1890, Robert Koch¹ employed these words: "A physician who does not use all the measures at his command to diagnose tu-

1. Robert Koch, Deut. Med. Wochen. Nov. 13, 1890.

berculosis in its earliest stage * * *
will be accused of serious neglect. * * *
In doubtful cases the physician should assure
himself of the presence or absence of tuber-
culosis, by means of the tuberculin test in-
jections."

TUBERCULIN.

The name tuberculin was given by Koch to the substance which he prepared by boiling down the culture fluid on which tubercle bacilli had grown, to one tenth its original volume, removing the bacilli by filtering through porcelain.

He afterwards prepared another product by a different method and called it new tuberculin. Many other preparations from the tubercle bacillus have been made by other workers and all are classed under the general name of tuberculin. Much confusion has arisen from the fact that many writers have called tuberculin a specific substance because all of these various tuberculins produce a specific reaction in persons who have a tuberculous infection, whereas the fact is that all tuberculins contain several specific substances, each of which plays a definite part in the specific reaction. All of the specific substances are found in the tubercle bacillus, which is a complex structure, and the different tuberculins differ from each other chiefly in the relative proportions of the various constituents obtained by the different methods of extraction.

The reaction to tuberculin is dependent upon the law of hypersensitiveness to foreign protein, and the reaction is essentially the same, whether it reaches the sensitive serum by being injected into or under the skin, dropped in the eye, forced through the skin by inunction, or by scarification.

The last, which is the von Pirquet test, is the most convenient, but its usefulness, like that of the others, depends upon the ability of the observer to interpret it. There are many who say that the von Pirquet reaction is of no value in adults, and if they interpret a *negative* reaction to mean that the patient has no tuberculosis and a positive reaction to mean that he *has* tuberculosis, then I must subscribe to their belief that it is of no value, but after observing the results in some five thousand tests, I think we can predict almost to a certainty, from observing the von Pirquet reaction, what kind of response will be obtained from a subcutaneous diagnostic dose of old tuberculin, which nearly all agree is diagnostic of active tuberculosis.

The tuberculin test is not direct evidence of tuberculosis, but is evidence that the individual has been sensitized by the presence of tubercle products, and by the degree of sensitiveness we conclude whether or not active tuberculosis is

present. The von Pirquet test should be applied to every individual suspected of being tuberculous, and if the result is positive then the patient should be kept under observation until well founded and definite conclusions have been reached.

A positive reaction means that the patient either has, or has had a tuberculous focus. A negative reaction means that he either has no tuberculosis, or is so overwhelmed with tubercle toxins that he has lost his ability to react to the small quantity of tuberculin introduced by the scarification. While it is quite true that ninety per cent. of all adults will give a positive von Pirquet reaction because ninety per cent. of all adults have a tuberculous focus, it does not require a large experience to interpret the milder degrees of reaction which are due to these old or latent foci, and if we apply a skin test now, and again in a few months getting a much more vigorous reaction, then it should be considered evidence of activity and the patient given a diagnostic dose.

TREATMENT.

So much has been said about the value of rest, fresh air, and good food in the treatment of tuberculosis, that it is not uncommon to have a patient express the opinion that "any one knows how to treat tuberculosis, just sit out doors, eat eggs and drink milk." How fortunate it would be if it were as easy as this. In our work in the dispensary we are not confronted with the problem as to what climate or food to select. They live in basements and back tenements often without means to buy sufficient food for their families, much less select a special diet, and yet for the past five years our patients have made an average gain of a pound a month. We believe this to be due solely to tuberculin treatment, for except for the tuberculin injection once a week, we are able to do little else for them.

To say that a patient is improved may be a matter of opinion, but when we can see many patients who for long periods of time, have been unable to work, have their earning capacity restored and be able to continue at work and support their families, it is not surprising that we have no small measure of faith in the efficacy of specific treatment.

It is gratifying to find that others have similar faith. Prof. Dr. Nietner² of Germany, in November, 1912, says "As we must accept the theory that the specific resistance of the infected organism is raised through the injection of tuberculin, it follows that the tuberculin treatment should be started as early as possible. This is the best possible way of preventing closed tuberculosis from becoming open tuber-

² Prof. Dr. Nietner, Inaugural Lecture, Lancet, Nov. 16, 1912.

culosis. My long experience has converted me into a profound believer in the efficacy of tuberculin."

That tuberculin is steadily growing in favor is shown by the following statement made by Pottenger³: "In the German Sanatoria, in 1905 I found considerable hostility to tuberculin, and only about twenty-five per cent. were employing it therapeutically. In 1909 about two thirds of them were using it."

In the specific treatment of tuberculosis, it is well to have clearly in mind what we can expect it to accomplish, and what it cannot do.

Specific treatment stimulates the production of antibodies, which in their turn inhibit the growth of the tubercle bacillus, and when completely effective dissolve and destroy the bacillus. But they do not neutralize the destructive effect of the toxins, which have already become fixed to the body cells, though they may neutralize the toxins which are being formed. It has no effect upon material already destroyed and which must be eliminated in the usual way.

One underlying principle in the successful employment of specific treatment, is that for the production of immunity, two factors are essential. First: a sufficient dose of a product which contains all the substances requisite to the production of antibodies against the separate constituents of a complex structure like the tubercle bacillus. Second: the repetition at regular intervals of smaller doses of the same or similar tubercle product for the purpose of stimulating the functions of the antibodies.

This explains why we often get a striking improvement after a large dose of tuberculin given for diagnostic purposes. We can keep up a more sustained improvement by following with small doses, than when the larger doses are continued.

In May, 1912, Dr. Karl von Ruck⁴, in a paper which he read before the Chicago Medical Society, announced that he had perfected a vaccine by the use of which he could produce complete immunity to tuberculosis in uninfected children and adults, with a single dose. Believing this to be the most important advance in tuberculosis work since the discovery of the tubercle bacillus by Robt. Koch, I at once made arrangements to visit the research laboratory of Dr. von Ruck and study the subject at first hand.

To my great gratification I found there a group of earnest workers, and a laboratory equipped to the last detail, with hundreds of animals under experimentation.

Unlike many preparations presented to the

profession, there was absolutely no secrecy regarding the preparation or the details of its manufacture, and any reputable physician is welcomed and afforded every opportunity to study every phase of the work.

This remedy, which is a vaccine containing all the soluble products of the tubercle bacillus, in proportions differing from those found in the tubercle bacillus as shown by chemical analysis. After a person, not infected with tuberculosis receives an injection of this preparation his serum develops the property of completely dissolving and destroying the tubercle bacillus in a test tube, a property which his serum did not possess before the treatment.

When the contents of this test tube containing the tubercle bacilli killed by the patient's serum, without the addition of any other product are injected into an animal, the animal does not develop tuberculosis.

Recently an effort has been made to discredit this work, but in the six weeks I spent in the laboratory and in my own experience in treating more than two hundred children and adults with the vaccine, I have had too many convincing proofs of its efficacy to be disturbed in my belief that we have a means of successfully protecting against tuberculosis.

While this remedy is distinctly not a cure for tuberculosis, it will do all that any of the present known specific products will do towards checking the ravages of the disease, and further, we have in this vaccine, as delicate a diagnostic aid as any we possess, with the added advantage that while using it for diagnostic purposes, we are at the same time employing a remedial agent.

EMPTYING OF THE UTERUS AS ONE OF THE METHODS OF TREATING ANTEPARTUM ECLAMPSIA *

REUBEN PETERSON, M.D.

ANN ARBOR, MICHIGAN.

It may seem unnecessary to discuss at this late day the advisability of emptying the uterus as a method of treatment of antepartum eclampsia. For the great majority of practitioners, when confronted with a case of antepartum eclampsia, knowing that primarily the pregnant state is responsible for the patient's condition, proceed to empty the uterus. They may not be satisfied with the results of such treatment, may even be discouraged at the high maternal and fetal mortality attending eclampsia, but the very next patient is subjected to the same treatment. This has always been and always will continue to be the case until the true cause of eclampsia be discovered and by

3. Pottenger, F. M. Tuberculin in Diagnosis and Treatment, 1913.

4. von Ruck, Karl. Jour. Am. Med. Asso. May 16, 1912.

* Read before the Section of Gynecology and Obstetrics, M. S. M. S., 48th Annual Meeting, held in Flint Sept. 4-5, 1913.

prophylactic treatment the complication can be prevented.

Try as we may we can not escape the logic of the situation confronting us. While the real cause of eclampsia is unknown, it is undoubtedly true that the condition is due to an intoxication arising primarily from the pregnant state. Non-puerperal women are subject to toxemias closely resembling in many of their characteristics that present in eclampsia. The clinical symptoms and pathologic changes in the liver in acute yellow atrophy of that organ, closely resemble the characteristic symptoms and pathologic lesions of eclampsia, but the two diseases or complications are not the same. Eclampsia exists because the woman is or has been pregnant. Unless she were pregnant to start with eclampsia could not have been existent. Therefore, being induced by the pregnant state and because that state adds to the patient's danger under the best of conditions and treatment, the best interests of the pregnant woman are preserved by terminating the pregnancy as soon as this can safely be accomplished.

Is this not the way the average practitioner reasons and is this not what he does in practice? I believe this can be answered in the affirmative. Circumstances may be such as to modify his treatment. He may feel unqualified to institute the proper operative treatment; his patient may show signs of improvement after the first convulsion and he delays the operation; the first convulsive seizure may be intrapartum with labor progressing favorably, hence the delay. But aside from these and other exceptions the great majority of practitioners at least believe in, if they do not practice, emptying the uterus in antepartum eclampsia. If this be true why are the results of the operative treatment of antepartum eclampsia in general practice so poor? For there is no gainsaying the fact that the mortality and morbidity from this complication of pregnancy both from the standpoint of mother and child are still very high. This should not be true in reference to a mode of treatment employed for many years, unless there be associated with such treatment something which has tended to lessen its efficiency. Either this or the whole reasoning is wrong and there is no call to empty the uterus of an eclamptic for the purpose of bettering her condition.

THE CAUSE OF HIGH MORTALITY RATE.

The whole purpose of this paper is to call attention to what in my opinion has led to the poor results of the operative treatment of eclampsia in private practice. For there would be no question of the superiority of hospital over private practice statistics in this particular obstetric complication, were it possible to

compile such statistics from private practice cases.

The reasons for the poor results of operative treatment of antepartum eclampsia in private practice are:

1. The wasting of valuable time in other forms of treatment before operative delivery is accomplished.

2. The selection of the wrong method of delivery of the antepartum eclamptic, whereby the patient is subjected to prolonged anesthesia and trauma.

3. The resulting sepsis from improper technique in patients whose powers of resistance are greatly lowered by the action of the eclamptic poison.

1. The wasting of valuable time in other forms of treatment before operative delivery is accomplished.

This will be discussed first because on the whole it is more responsible for the poor results than either of the other two factors. I am perfectly aware of the fact that the number of convulsions is no absolute indication of the degree of the maternal intoxication. A patient may die immediately after the first or may survive a hundred convulsions. But we must not confound the exceptions with the rule. While the exceptional patient may live after many convulsions, it still is true, as I have shown statistically in a review of 530 cases of eclampsia treated by vaginal Cesarean section that: "The mortality in eclampsia after vaginal Cesarean section increases with the increase in the number of convulsions preceding the operation" and (2) that "When the operations are performed after ten convulsions the mortality rapidly increases until it reaches a high figure."

At the present time we have no accurate means of determining the degree of intoxication of the eclamptic patient. Our estimation must then be approximate and for that reason far from accurate. In the case of the particular patient under observation the fact that her individual organism is so acted upon by the eclamptic toxin as to react in the form of a convulsion, is warning enough that the patient is in serious danger and needs relief, not after the poisoning has gone on to the point where it results in ten or more convulsions, but immediate relief brought about by emptying the uterus promptly.

In my opinion there is where the practitioner has erred. He has emptied the uterus, yes, but only as a last resort when the patient is in bad shape, profoundly under the influence of the eclamptic poison. He has wasted valuable time trying to eliminate the poison by cathartics, diuretics and diaphoretics when the patient's conditions was such as to handicap his efforts. The dictum "empty the uterus first in cases of antepartum eclampsia and then em-

ploy eliminative measures" should supplant the dictum "try eliminative measures first in antepartum eclampsia and if they fail empty the uterus as a last resort."

We all know the difficulties of elimination prior to the emptying of the uterus. Even when the mouth of the unconscious patient has been forced open and powerful cathartics are introduced into the stomach, a certain time must elapse before results can be obtained. During this interval the eclamptic poison is being elaborated. Possibly during this period just enough more is produced to turn the scale against the patient. The same is true of diuretics which may even be harmful to the kidney epithelium already injured by the eclamptic toxin. The difficulties of securing sufficient diaphoresis in the pregnant woman to prove of any avail in combating the effects of the poison are too well known to need discussion. However, difficulties could be overcome, if we were satisfied that by so doing we were acting in the best interests of our patients, which I am firmly convinced is not the case when we refrain from immediately stopping the manufacture of the poisons within the pregnant uterus by emptying that organ.

Statistical proof is not wanting of the superiority of prompt delivery in eclampsia over the expectant method of treatment. In the paper on eclampsia quoted above I have shown that in 615 cases of eclampsia treated by prompt delivery the maternal mortality was 16 per cent., while in 390 cases of the same complication

treated expectantly the maternal mortality was 29 per cent. (Table I.) In another series of 150 cases treated by immediate delivery, that is, delivery as soon as possible after the first convulsion the maternal mortality was only 4 per cent., while delay in delivery, that is, conservative treatment by the same operators in 147 cases gave a maternal mortality of 31 per cent. (Table II.)

Zweifel had a mortality of 33 per cent. under the expectant plan of treatment of eclampsia, while the maternal mortality was reduced over half or to 15 per cent when the eclamptics were delivered immediately after they entered the clinic. The mortality, in turn, rose to 23.5 per cent when prompt delivery was not employed as frequently.

It may be claimed and possibly with some truth that statistics based upon a few hundred cases of eclampsia under different modes of treatment may be open to error. To meet this criticism, since the paper on vaginal Cesarean section for eclampsia, I have gone to the pains of collecting from the literature many more cases of this complication. These cases have been arranged in groups according to whether the patients had been subjected to operative delivery or had had spontaneous labors. In addition the cases were grouped chronologically, one group comprising those cases occurring before 1900 and a second group those occurring between 1900 and 1912.

This latter arrangement is absolutely necessary, if we are to judge of the value of any

TABLE I.

Showing the results of prompt delivery and the expectant plan of treatment of eclampsia.

| | Prompt delivery | | Expectant treatment | |
|----------------------|-----------------|-----------------------|---------------------|----------------------|
| | Number of cases | Mortality Percentages | Number of cases | Mortality Percentage |
| Bumm-Liepmann | 104 | 5= 4.8 | 90 | 28=31.1 |
| Esch ('04-'06) | 101 | 20=19.8 | 79 | 20=25.3 |
| Esch ('05-'06) | 36 | 8=22.2 | 145 | 42=28.9 |
| Glockner | 115 | 20=17.3 | 9 | 3=33.3 |
| Möhlmann | 104 | 16=15.3 | 10 | 1=10 |
| Winter | 75 | 17=22.6 | 8 | 3=40 |
| Zweifel | 80 | 12=15 | 49 | 16=32.6 |
| Total | 615 | 98=15.9 | 390 | 113=28.9 |

TABLE II.

Showing the results of immediate delivery and conservative treatment of eclampsia.

| | Immediate Delivery | | Conservative Treatment | |
|----------------|--------------------|----------------------|------------------------|----------------------|
| | Number of cases | Mortality Percentage | Number of cases | Mortality Percentage |
| Liepmann | 79 | 2= 2.5 | 90 | 27=30 |
| Seitz | 19 | 2=10.5 | .. | 28.3 |
| Winter | 22 | 0= 0.0 | 8 | 3=37.5 |
| Zweifel | 30 | 2= 6.6 | 49 | 16=32.6 |
| Total | 150 | 6= 4 | 147 | 46=31.2 |

form of obstetric surgical treatment. Before 1900 even in some well equipped maternity hospitals aseptic methods were conspicuous for their absence. It is quite evident that a woman suffering from antepartum eclampsia might be benefitted by the emptying of her uterus, yet might die of sepsis, if poor technic had been employed. This death, however, would be counted against the treatment of eclampsia by operative delivery, unless it could be shown by grouping the cases chronologically, that the results after operative delivery improved as the operators became more aseptic and skillful.

This is just what these grouped cases show. In 1,126 cases of eclampsia (Table III.) occur-

ring prior to 1900 the maternal mortality was 23 per cent. where the women delivered themselves, while in 1,443 cases where operative delivery was employed the mortality was higher, that is, 28 per cent. If this difference in mortality were due to the superiority of the method of delay, medicinal treatment and spontaneous labor, it ought to hold good in cases occurring from 1900 to 1912. But such is not the case for in 290 cases of eclampsia with spontaneous labors between 1900 and 1912 (Table IV) the maternal mortality is 19 per cent. while in 1,496 cases treated by operative delivery during the same period the maternal mortality is only 15 per cent., an advantage of 4 per cent.

TABLE III.

Maternal Mortality after Spontaneous and Operative Delivery in Eclampsia.

| Prior to 1900. | | | | | | |
|----------------------------|--------------|---------------|----------------------|--------------|---------------|----------------------|
| | Spontaneous | | | Operative | | |
| | No. of Cases | No. of Deaths | Mortality Percentage | No. of Cases | No. of Deaths | Mortality Percentage |
| Olshausen | 111 | 24 | 21.6 | 77 | 16 | 20.8 |
| Goedecke | 97 | 27 | 27.83 | 192 | 31 | 16.1 |
| Buettner (1881-1891) | 41 | 15 | 36.5 | 75 | 19 | 24.66 |
| Buettner (1892-1899) | 162 | 31 | 19.13 | 162 | 34 | 20.97 |
| Glockner | 10 | 3 | 30.00 | 114 | 20 | 17.5 |
| Bumm | 61 | 18 | 29.5 | 27 | 8 | 29.6 |
| Liepmann | 180 | 41 | 22.77 | ... | ... | |
| Dührssen | 38 | 8 | 21.00 | 80 | 19 | 23.75 |
| Goldberg | ... | .. | 16.28 | 38 | 13 | 34.21 |
| Knapp | 5 | 0 | 00.00 | 17 | 1 | 5.88 |
| Schauta | 73 | 16 | 21.9 | 153 | 73 | 47.71 |
| Schreiber | 59 | 12 | 20.33 | 78 | 15 | 19.23 |
| Green | 3 | 0 | 00.00 | 18 | 8 | 44.44 |
| Paupertow | 168 | 54 | 38.7 | 110 | 67 | 61.3 |
| Baskin | 43 | 5 | 11.63 | 84 | 18 | 21.43 |
| Leske | 7 | 1 | 14.28 | 29 | 5 | 17.24 |
| Lantos | 19 | 3 | 15.76 | 37 | 12 | 32.43 |
| Ostrel | 22 | 2 | 9.09 | 51 | 15 | 29.41 |
| Bayer | 10 | 1 | 10.00 | 26 | 8 | 30.76 |
| Meyer-Wirz | 7 | 2 | 28.57 | 58 | 22 | 37.93 |
| v. Braitenberg | 10 | 0 | 00.00 | 17 | 2 | 11.76 |
| Total | 1126 | 263 | 23.35 | 1443 | 406 | 28.13 |

TABLE IV.

Maternal Mortality after Spontaneous and Operative Delivery in Eclampsia.

| Between 1900 and 1912. | | | | | | |
|--|--------------|---------------|----------------------|--------------|---------------|----------------------|
| | Spontaneous | | | Operative | | |
| | No. of Cases | No. of Deaths | Percentage Mortality | No. of Cases | No. of Deaths | Percentage Mortality |
| Esch | 77 | 16 | 20.8 | 267 | 45 | 16.8 |
| Möhlmann | 10 | 1 | 10.0 | 94 | 15 | 15.95 |
| Daels | 19 | 3 | 15.7 | 301 | 39 | 12.9 |
| Seitz (München. Klin.) ('03-'07) | 1 | 1 | 100.00 | 21 | 4 | 19.04 |
| Zinke | 26 | 4 | 15.38 | ... | ... | |
| Lichtenstein (1900-1911) | 87 | 20 | 22.96 | 309 | 49 | 15.85 |
| Lichtenstein (1911-1912) | 24 | 00 | 00.00 | 21 | 5 | 23.8 |
| Freund (1904-1912) | 44 | 11 | 25.00 | 355 | 56 | 16.8 |
| Meyer-Wirz (1900-1904) | 2 | 1 | 50.00 | 24 | 4 | 16.66 |
| Liepmann | ... | .. | | 104 | 5 | 4.8 |
| Total | 290 | 57 | 19.65 | 1495 | 222 | 14.83 |

in favor of the treatment of eclampsia by operative delivery. And these figures do not by any means tell the whole story. These patients were not subjected to immediate delivery after the first convulsion, but the list includes patients delivered by operative means at varying periods after the first convulsion. According to our contention this is poor treatment, yet in spite of this the patients were helped sufficiently by the emptying of the uterus to make the results 4 per cent better than when the uterus was not emptied.

Olin, who from the nature of his material was able accurately to estimate the time elapsing between the first convulsion and the operative delivery, found the mortality in 31 patients with eclampsia, delivered one to three hours after the onset of the first convulsion to be only 3 per cent. In contrast to this, the mortality in 50 cases where the patients were delivered from six to twenty-four hours after the first convulsion the mortality was 28 per cent.

The opponents of the operative treatment of eclampsia are fond of advancing the argument that in 50 per cent. of the cases even after the uterus is emptied the convulsions do not cease. This only goes to show that the uterus was not emptied promptly enough after the first convulsion. Postpartum convulsions occur because the patient was so saturated with the eclamptic poison before the source of supply was shut off by emptying the uterus, that postpartum seizures were the result. They occurred not because of but in spite of the operative measures employed.

2. The selection of the wrong method of delivery of the antepartum eclamptic whereby the patient is subjected to prolonged anesthesia and trauma.

The eclamptic patient's condition is always serious. The liver, kidneys and brain are overwhelmed by the poison which not only is affecting the tissues of the organs themselves but is seriously interfering with their functions by its effect upon the higher nerve centers which control these functions. An additional burden placed upon the organism may be more than it can struggle against and death may ensue. More and more are we realizing that chloroform and ether are not the harmless drugs they were formerly supposed to be. Prolonged anesthesia is always dangerous to the patient and may result fatally in a woman whose system is not overwhelmed by poison. Much more is this the case with the eclamptic. Hence it is essential to choose the operative procedure which will empty the uterus the quickest with minimum trauma and shock to the patient.

Here also has the practitioner erred in the past. Many of his eclamptics were primiparæ

with rigid and undilated cervixes. Afraid of any cutting operation on the pregnant patient, hours have been spent in manually dilating a rigid cervix when a vaginal or an abdominal Cesarean section would have resulted in delivery in ten or fifteen minutes. We all know how manual dilatation is attempted under such circumstances. When the cervix is rigid it is not a question of an hour but a number of hours, the patient all this time under an anesthetic. Is it any wonder that such patients die? The wonder is that any of them survive such treatment.

I have been greatly criticized on more than one occasion for advocating that the practitioner be prepared to do vaginal Cesarean section under some circumstances. Yet I have seen no reason for withdrawing from my position. I still claim that the practitioner who is taught and expected to perform high forceps will accomplish far more and do less harm with vaginal Cesarean section in certain cases of rigid cervixes than would be the case if he used manual dilatation. The objection is made that he will cut into the bladder or rectum. He may if he has not mastered the technic, but even then it is no worse than *tearing* through the bladder and rectum or up into the broad ligament or into the peritoneal cavity as often occurs with manual dilatation. As far as I can see the only advantage of the latter operation is that bungling work is done out of sight and the death of the patient can be ascribed to the eclampsia. I am not advising that the bungler do *any* operation. Far better for the eclamptic if he keeps his hands off and simply watches the outcome. I am referring to the competent practitioner who is prepared to perform any emergency operation. With few exceptions students can be taught to perform this emergency operation. That they are not so taught is no argument against the principle I am contending for.

This is not the place to enter into a discussion of what operations are indicated under certain conditions. It is the principle we are chiefly interested in. Choose the operation which will empty the uterus the quickest with minimum trauma and shock to the patient. If to this be added delivery as soon as possible after the advent of the first convulsion, the result will be immense improvement in the mortality statistics of eclampsia.

3. The resulting sepsis from improper technic in patients whose powers of resistance have been greatly lowered by the action of the eclamptic poison.

It is unnecessary to discuss this section at length since it has already been referred to. While obstetric asepsis has improved during the past twenty-five years in private practice it can not be said to have kept pace with the ad-

vances in other departments of surgery. Slips in technic in obstetric operations performed in private homes are so common as to hardly command attention. As an example, consider the operation of manual dilatation referred to above. As ordinarily performed the fingers of one hand are used as dilators until they become tired or numb then the hand is withdrawn and the other hand introduced. Here is a great source of danger unless the greatest care be observed to keep the hand away from the anus, a region hard to sterilize and readily infected. This is only one example—many more sources of danger or slips in technic accompanying forceps operations, versions and other operations commonly performed upon the eclamptic might be pointed out.

Again attention is called to the improvement in the maternal mortality in eclampsia during the period from 1900 to 1912. Undoubtedly this improvement is due to better asepsis and

eclamptic poison and the sooner it is delivered after the first convulsion the better off it will be. This I have shown statistically, so far as vaginal Cesarean section is concerned. The total fetal mortality in 315 children delivered by vaginal Cesarean section was 21 per cent., while it was only 12 per cent. when not more than three convulsions occurred before the birth of the children.

Again, as we have seen, better maternal results follow rapid delivery with minimum shock and trauma. The same holds true for the fetus. It has long been recognized that prolonged anesthesia is injurious to the fetus, thus pointing the way to the substitution of other more rapid methods for the prolonged manual dilatation where the cervix is rigid, and so on through the list of operative procedures for antepartum eclampsia. What is good for the mother is good for the viable fetus.

For the purpose of studying the fetal mor-

TABLE V.

Fetal Mortality after Spontaneous and Operative Delivery in Eclampsia.

| | Prior to 1900. | | | | | |
|----------------------------|----------------|---------------|----------------------|--------------|---------------|----------------------|
| | Spontaneous | | | Operative | | |
| | No. of Cases | No. of Deaths | Percentage Mortality | No. of Cases | No. of Deaths | Percentage Mortality |
| Glockner | 9 | 1 | 11.11 | 110 | 52 | 47.27 |
| Buettner (1881-1891) | 44 | 22 | 50.00 | 71 | 27 | 38.00 |
| Buettner (1892-1899) | 64 | 25 | 39.06 | 151 | 58 | 38.41 |
| Goldberg | ... | .. | 37.6 | 41 | 20 | 48.78 |
| Knapp | 5 | 0 | 00.00 | 18 | 4 | 22.22 |
| Schreiber | 71 | 15 | 21.12 | 78 | 24 | 30.7 |
| Baskin | ... | .. | 46.5 | ... | ... | 36.9 |
| Green | 3 | 1 | 33.33 | 12 | 4 | 33.33 |
| Meyer-Wirz | 7 | 2 | 28.57 | 46 | 28 | 60.86 |
| Total | 203 | 66 | 32.51 | 527 | 217 | 41.17 |

increased skill on the part of the obstetric operators. If to this be added immediate delivery after the onset of the first convulsion, we shall see during the next decade a great change for the better in the mortality statistics of antepartum eclampsia.

THE QUESTION OF THE FETUS IN ANTEPARTUM ECLAMPSIA.

Each year the rights of the unborn child are receiving more consideration at the hands of the obstetrician. While the majority still decide in favor of the mother, when it comes to a choice between the lives of the mother and child, ruthless sacrifice of the latter is being condemned more and more as time goes on. If the child be viable only those methods of treatment of eclampsia should be selected which will best safeguard its interests. Fortunately for both mother and child the interests of each are best served by identical procedures. The fetus, as well as the mother, is acted upon by the

tality in antepartum eclampsia after spontaneous and operative delivery I have grouped cases chronologically as before into two periods, prior to 1900 (Table V) and between 1900 and 1912 (Table VI). As would be expected, prior to 1900 the advantage is with spontaneous delivery for these were the days of rough methods and lack of appreciation of the rights of the fetus. The fetal mortality in 203 cases prior to 1900 when the deliveries were spontaneous was 33 per cent., while with 527 operative deliveries during the same period the fetal mortality was 41 per cent.

The second table, between 1900 and 1912, shows a great reduction in fetal mortality both after spontaneous and operative delivery, but more so after operative delivery because of the improvement in the skill of the operators.

In 220 patients during this period delivered spontaneously the fetal mortality was 23 per cent., while in 1,164 cases after operative deliv-

ery the fetal mortality was 29 per cent. It will also be observed that while the advantage, so far as the fetus is concerned, still lies with spontaneous delivery the ratio between the two has been reduced from 8 to 6 per cent.

Moreover it should be remembered that the patients delivered spontaneously were probably the milder cases, since in profound intoxication operative delivery has always been resorted to. When once it be realized that it is best for both mother and child that delivery take place immediately after the first convulsion, the superiority of operative delivery, so far as the child is concerned, will immediately show itself. I am confident there will be an improvement over the 12 per cent. fetal mortality referred to after vaginal Cesarean section when the operations were performed after not more than three convulsions.

CONCLUSIONS.

1. Since the pregnant state is primarily responsible for eclampsia,

to the eclamptic mother, is equally good for her child.

8. Hence, immediate delivery after the first convulsion will result in a low fetal as well as a low maternal mortality.

DR. JOHN BELL, DETROIT.

I am at a loss to know just what to say in opening the discussion on the subjects except perhaps to express appreciation of the resume from the standpoint of statistics which Dr. Peterson has given us, also to emphasize what he has stated in the treatment that as soon as the patient has had one convulsion the uterus should be emptied. At this day and age it seems strange that we should find men who still persist in using delay and "dilly-dallying" and giving this and that and the other when it has been proven so clearly by statistics that early operation causes the low mortality, and the neglect to operate early brings the high mortality. It seems that there is just one thing to do and we should get that thoroughly impressed on our minds as early as possible, and that is: when the patient has one convulsion to operate and not hesitate; not hold any further consultation, but empty that uterus.

DR. BOYS, KALAMAZOO.

I have always believed in the principles advocated by Dr. Peterson, early emptying of the uterus, and yet it is not without its difficulties. I have had three deaths from eclampsia. The first one the lady was playing cards at eight o'clock; feeling good. She soon became dizzy and nauseated; went home; in thirty minutes she went into coma, and in another hour she died. The post-mortem examination showed a typical finding of eclampsia. The second case was as healthy a young woman as anybody ever saw, apparently

TABLE VI.
Between 1900 and 1912.

| | Spontaneous | | | Operative | | |
|--------------------------------|--------------|---------------|----------------------|--------------|---------------|----------------------|
| | No. of Cases | No. of Deaths | Percentage Mortality | No. of Cases | No. of Deaths | Percentage Mortality |
| Esch | 44 | 7 | 15.7 | 190 | 46 | 39.1 |
| Möhlmann | 10 | 3 | 30.00 | 94 | 22 | 23.4 |
| Daels | 19 | 3 | 15.7 | 229 | 79 | 34.4 |
| Zinke | 26 | 14 | 53.88 | ... | ... | |
| Lichtenstein (1900-1911) | 53 | 10 | 18.87 | 318 | 134 | 42.1 |
| Lichtenstein (1911-1912) | 31 | 7 | 22.58 | 19 | 5 | 26.31 |
| Freund (1904-1912) | 34 | 6 | 17.64 | 291 | 42 | 14.43 |
| Meyer-Wirz (1900-1904) | 3 | 00 | 00.00 | 23 | 6 | 26.08 |
| Total | 220 | 50 | 22.72 | 1146 | 334 | 28.69 |

The best interests of such patients are promoted by terminating the pregnancy as soon as this can safely be accomplished.

2. The wasting of valuable time in other forms of treatment before operative delivery, is responsible, in great part, for the poor results of treatment in antepartum eclampsia.

3. This is also aided by the selection of the wrong method of delivery of the antepartum eclamptic, whereby the patient is subjected to prolonged anesthesia and trauma and:

4. By the resulting sepsis from improper technic in patients whose powers of resistance are greatly lowered by the action of the eclamptic poison.

5. The eclamptic should be delivered as soon as possible after the first convulsion by the operation giving rise to the least shock and trauma.

6. The eclamptic patient should be delivered first and then elimination started, rather than the reverse.

7. Fortunately, the treatment best adapted

with a perfect condition of health. She began labor at term, was three-quarters through the dilatation period of labor—I might say her physician had examined the urine two weeks previously and it had been normal. At the time of labor he was not available and I was called. After three-quarters of the dilatation period she went just that quickly (snapping finger) into a convulsion; so quickly, in fact, that in delivering her across the bed her legs in striking out in convulsion threw me over against the wall. We immediately proceeded to the hospital as soon as an ambulance could be obtained. Delivery was started inside of an hour and finished in less than another hour. She proceeded to have convulsions, one after another almost continuously and died eleven hours later. The third case was one which a doctor in a neighboring town first observed after the first convulsion had taken place. At that time he boiled some urine in a test tube, turned it upside down and nothing ran out. That was the first I had seen of her and had a chance to observe the condition of the urine. We delivered this woman in I should say three to four hours after the first convulsion and she promptly died six or seven hours after the delivery. So even prompt delivery is discouraging or has been in the instances with which I have been familiar. About the only cases, with one exception, that we have had success in were those cases which we have delivered really before the convulsions took place. Where one has observed the urine and seen the increased amount of albumen in the urine and the bloating and other symptoms which will suggest it is very likely to occur, those cases we have succeeded in without any failure, but after convulsions have once been established I think our mortality has been more than success. The method of delivery employed has been manual dilatation. Perhaps I am blessed with more manual ability in my left hand than some are; I know I am than some of my conferees; I never have had to change hands; I can always deliver with my left hand; I never failed to dilate any cervix inside of an hour. The one case I just stated, we had the baby delivered in twenty minutes from the time we started to dilate. Perhaps the violence of the dilatation, as rapid as that, by our manual

dilatation, had something to do with shock that perhaps entered into the case. The second case stated had considerable chloroform. I had not the feeling at that time with reference to chloroform that I have now. I never use chloroform in obstetrics and have not for two or three or four years. She did have a considerable amount of chloroform and possibly it had something to do with the severity of her condition. I believe thoroughly in prompt delivery and in eliminative measures to follow than preceding the delivery.

DR. CARSTENS, DETROIT.

The question to me is always: Which is the best way? From the statistics that we can get it seems that the sooner you deliver the woman the fewer convulsions we are having. The simple question of delivery does not stop the convulsions because women very often have convulsions even after they are delivered normally without any effort at all, but a long series of cases have proven beyond any question of doubt that the quicker you can deliver a woman the better she is off. We never know what one convulsion will do. She might have one hundred and not hurt her a particle and the first one may produce some paralysis somewhere; the first one may kill her; all around the fewer convulsions the better, so that I believe in active interference and deliver them as soon as possible. If they have a slight attack and it passes over, why I believe in delivering them by a slow process of production of labor, by a catheter or anything of that kind; but if they have active convulsions they should be delivered quickly, and of course you can only deliver them quickly by vaginal Cesarean section. Manual dilatation takes time. The doctor just stated he had quite a strong hand, good muscles. I have too, but it will take you a couple of hours. If you deliver, as Dr. Peterson has so often talked, by vaginal Cesarean section, you can do it in five minutes.

Now, anybody I think, any reasonable person would say if quick delivery is necessary and is valuable, why certainly when you can deliver in five minutes it is a great deal better than waiting two hours and manipulating all kinds of ways, and I hold that it is up to the general practitioner, who is the obstetrician of the country to become familiar with the method of operating by vaginal Cesarean section. Of course when a man has not had much practical experience in that line he will say it is a very difficult thing, but it is not. Dr. Peterson, Dr. Morly, Dr. Bell and I, any one of us, will be glad to show you how it is done. It is a very simple operation; you can easily separate the bladder from the uterus and split up the anterior wall of the uterus so that you can deliver the woman with or without forceps in a very few minutes. Now, if by a combination of circumstances, by timidity and by fear you should cut into the bladder or if that uterus don't heal after you sewed it up, after you got the woman delivered, it does not hurt a particle if that woman has a hole in her bladder or if she has a uterus that has not healed entirely. That can easily be fixed up afterwards. It is a great deal better to have a woman in that condition than a woman that is buried six feet under the ground.

The Chairman: I was hoping, Dr. Carstens, that you were going to say something about nausea and vomiting in pregnancy.

Dr. Carstens: That is a very, very hard thing to say. I will just say this: These simple, ordinary cases of course we do not figure on, but the pernicious vomiting in pregnancy is certainly a most difficult problem. I have seen women vomit and vomit and vomit and hoping that the vomiting would cease and hoping that the vomiting would cease, but it does not, and they get weaker and weaker and all at once you decide that that woman really cannot live unless you end the pregnancy, and you end pregnancy and you do it too late and the woman dies. I have seen that over and over again quite a few times; I have myself done the same thing. We cannot just see where the line of demarkation is, so I hold it is one of the most difficult problems we have to deal with; but I think it is a great deal better to err on the safe side and bring on premature labor and save the woman's life even if once in a while we may do it unnecessarily. We see cases where women vomit very much, and we think they certainly would die and they finally recover, but I have seen a great many women where we err on the other side. For that reason I think we should be on the safe side and produce premature labor in these kind of cases before it is too late. With an examination now of the urine and the ammonia and so on we can be in a position that we can make a more accurate diagnosis than we could formerly and make use of that. I am sure in the future we will not make so many mistakes as we have in the past.

DR. LYNCH, CHICAGO.

It is always very easy to discuss a paper with which you thoroughly agree. It seems to me if there ever was any firm foundation for the treatment of eclampsia by the expectant method it would be dispelled by the statistics which Dr. Peterson has given us, but after all, if we believe that eclampsia is the typical type of toxic pregnancy, that is not traced to atypical toxemia, we must admit that there are lesions that are characteristic. These lesions are shown by Schmarfelfelt and Konstantivisch. Whether, of course, they are the essential things remain to be proven, but these women die with lesions in the liver, and if therefore there are lesions in the liver that are incompatible with life why sit around and wait further, why not interfere as quickly as you can, because we have no means of estimating the

destruction of the liver. At the present time, we have no means of estimating the sufficiency of the liver.

Now, it is of interest in relation to the type of cases brought here by Dr. Boys that there are undoubtedly three classes of eclampsia: one which is a pure eclampsia and one which comes after prodromes, and that which is the type which illustrates the name, "To shine forth suddenly." It comes on without warning, the type that you may see well yesterday and dead today, and these cases give no symptoms, their urine may show nothing, their blood pressure may show nothing. On the second hand we have the type which gives prodromes, which are the kidney type, which have manifestations of edema, which have plenty of kidney changes, they have a high blood pressure. Thirdly, we have the type which dies without any convulsions and this is a toxemia. And these three all have the same lesion in the liver, the difference is as to the lesions in the kidney.

Now, it is interesting that this type of cases, that is, the atypical type of toxemia is not an acidosis, that is, the only thing that our urinary test will show it is not acidosis, not marked or traced to the type of toxic vomiting which is acidosis, and the reason for that we do not know, but we do know that the total nitrogen falls in the toxic vomiting because the people have eaten no food, they are starving in your eclampsia: the type which dies without convulsion is eating, their nitrogen is high; while the other type is the type which people temporize with, which gives warning, which you put to bed, try elimination and everything else, merely waiting for them to blow up, merely waiting for their foetus to die.

In this connection I can but emphasize the remarks of Dr. Boys that the chloroform has no place in obstetrics, that the mortality in my own cases in my early days I am perfectly sure was augmented to 28 per cent. by the use of chloroform, and the work of Everett S. Graham in the Stark Laboratory has shown chloroform is transmitted to the foetus, that it will produce liver changes, that it is the cause of melena, that it causes a well defined, recognized circumscribed affection of the duodenum, therefore chloroform is not the drug to use.

DR. REUBEN PETERSON, ANN ARBOR.

We certainly are indebted to Dr. Lynch for his most excellent paper on this most dreaded complication of pregnancy, hyper-emesis gravidarum. I quite agree with him that almost all laboratory tests have proved most unsatisfactory as guides as to when to empty the uterus. As Dr. Carstens says, it is extremely difficult to say when we should interfere in these cases and empty the uterus. I think Dr. Lynch is right when he advocates for these cases of excessive vomiting the treatment found so serviceable for the acidosis following laparotomy cases. We have all of us, I think, seen the disastrous results which follow too long delay in emptying the uterus in such cases. I was recently unfortunate enough to have such a case. The patient had icterus and had been vomiting for some months. Although the uterus was emptied in a few moments, the patient died with all evidences of exhaustion from the profound intoxication present. Undoubtedly the same something causes the two conditions, excessive vomiting of pregnancy and eclampsia. Dr. Boys says his experience with emptying the uterus has not been very good. He must not forget that there are certain cases of eclampsia where no form of treatment will be of any avail. Even if the uterus be emptied after the first convulsion, the eclamptic toxins have caused so much damage to the liver, kidneys, brain and higher nerve centers that death will ensue in spite of everything. Such cases of eclampsia will be counted against any form of treatment of the complications. These patients die not because of the treatment, but in spite of it. But these are the exceptional cases. If the uterus be emptied early in the intoxication, as soon after the first convulsion as possible, in hundreds of cases we will find the results remarkably good. The same holds true in regard to the class of cases mentioned by Dr. Lynch, although with these cases it is more difficult to say when to interfere.

CHRONIC CYSTIC MASTITIS *

E. S. JUDD, M.D.

SURGEON TO THE MAYO CLINIC,
ROCHESTER, MINN.

A difference of opinion still exists among the profession regarding the pathology of chronic cystic mastitis. This name was given to the process by Koenig¹, who, as the term implies, believed it to be one of chronic inflammation with cyst-formation. Other early observers, for example, Reclus² and Schimmel-

* Read before the Section on Surgery of the Michigan State Medical Society at its 48th Annual Meeting, Sept. 4, 1913, held in Flint.

1. Koenig: *Centralblatt. f. Chir.*, 1893, XX, p. 49.

2. Reclus: *Gazette des Hopitaux*, July 7, 1877, p. 673.

busch³, believed that the cyst-formation and the cyst-degeneration or the increase in the cellular elements was the pathologic basis of the disease. Therefore, these authors have styled the condition "cystic disease of the breast" and "cystadenoma of the breast" respectively. Warren⁴ defines the process "abnormal involution" and Bloodgood⁵ defines it "senile atypical parenchymatous hypertrophy."

frequently just before or during the menopause, in the period often spoken of as the "cancer age," that is, between the ages of 30 and 60.

The pathologic picture of the condition varies so greatly that no less than twelve different descriptions have been published, each with a different name and each one describing a different arrangement of cells. The diversity of opinions on the pathology of these apparently



1. (Showing incision used in conservative operation.)

These terms embrace the names of abnormal processes. However, it is not so important to have the process correctly named as it is that we should understand its relationship to cancer.

TIME OF APPEARANCE AND PATHOLOGY.

This type of chronic mastitis appears more

similar conditions would lead us to believe that many of these pictures are different stages of one and the same process.

Various observers believe that chronic cystic mastitis is a precancerous stage and that it often undergoes malignant degeneration (Koenig, Tietze⁶, Keibel⁷, Bloodgood, etc). No one

3. Schimmelbusch: *Archiv f. klin. Chir.*, 1892, XLIV, 117-122.

4. Warren: *Jr. Am. Med. Assoc.*, July 15, 1905, 149-165.

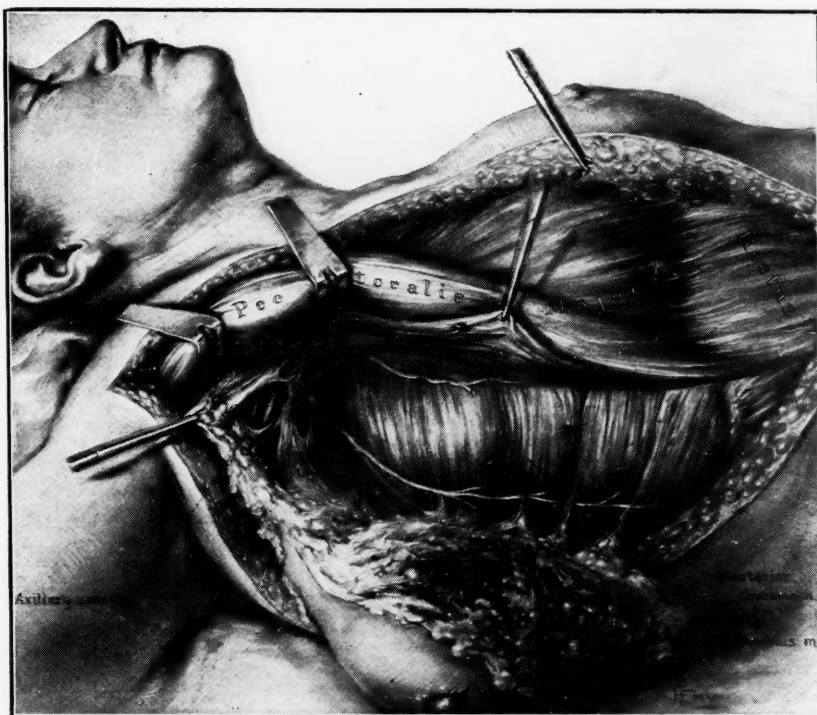
5. Bloodgood: *Jr. Am. Med. Assoc.*, Aug. 6, 1904, p. 367.

6. Tietze: *Deut. Ztschr. f. Chir.*, 1900, LVI, p. 512.

7. Keibel: *Berl. klin. Woch.*, 1904, No. 30.

has as yet actually observed such development take place, though it is true that cancer is frequently seen in association with chronic cystic mastitis. MacCarty⁸ believes it is difficult to draw the line between the hyperplastic changes seen in chronic cystic mastitis and the pictures that are definitely cancer. He also believes there is no sharp line of differentiation, but that one condition merges into the other and that cystic mastitis is usually, if not always, associated with cancer. The diagnosis can be made from the irregularity and characteristics of the cells, which, so far as can be determined, are exactly the same as the penetrating cancerous cells. The diagnosis of carcinoma should not always be postponed until the epithelial-cells

Two hundred eighteen of this series were classified as chronic cystic mastitis. Of these, eleven were males, all occurring between the ages of 20 and 30 years. Two hundred and seven were females: occurring between 20 and 30 years, nineteen; 30 and 40 years, sixty-three; 40 and 50 years, ninety-six; 50 and 60 years, twenty-seven; 60 and 70 years, one; age not mentioned, one. It will be seen that a large percentage of the cases occurred in patients between the ages of 40 and 50, and that nearly all of them occurred between the ages of 30 and 60. Of the 218 cases, mastitis occurred 93 times in the right breast (5 males), 88 times in the left breast (5 males), and 30 times in both breasts. Six were not mentioned. Of



2. Showing dissection of axilla (i. e. parts accessible without removal of muscles, and gland-bearing fascia). Breast has been almost removed and shows in lower portion of picture. Pectoralis Major is shown strongly retracted in order to expose axillary space.

have penetrated the basement membrane.

We are practically convinced that every case of cancer of the breast has associated with it some degree of chronic cystic mastitis, and it is most important to bear this point in mind, even though no definite relationship between the two has been demonstrated.

STATISTICS.

Up to January 1, 1913, we had operated on 929 cases of chronic cystic mastitis and cancer of the breast in the Mayo Clinic. Seven hundred and eleven of these were definitely malignant, though in almost all there was evidence of chronic cystic mastitis in varying degree.

8. MacCarty: S. G. & O., Oct., 1913.

the 207 females, 140 had had children, 45 had no children, 3 had had miscarriages, and 22 not mentioned.

In reviewing the ages of the 711 patients with cancer, we find 79 per cent. or a large proportion of them occurred in the "cancer age," i. e., between the ages of 30 and 60. A larger proportion occurred in the cases of chronic cystic mastitis, since during that same period (30 to 60 years) there were 186 cases in the total 218, (85.3%).

HISTORY AND PHYSICAL EXAMINATION.

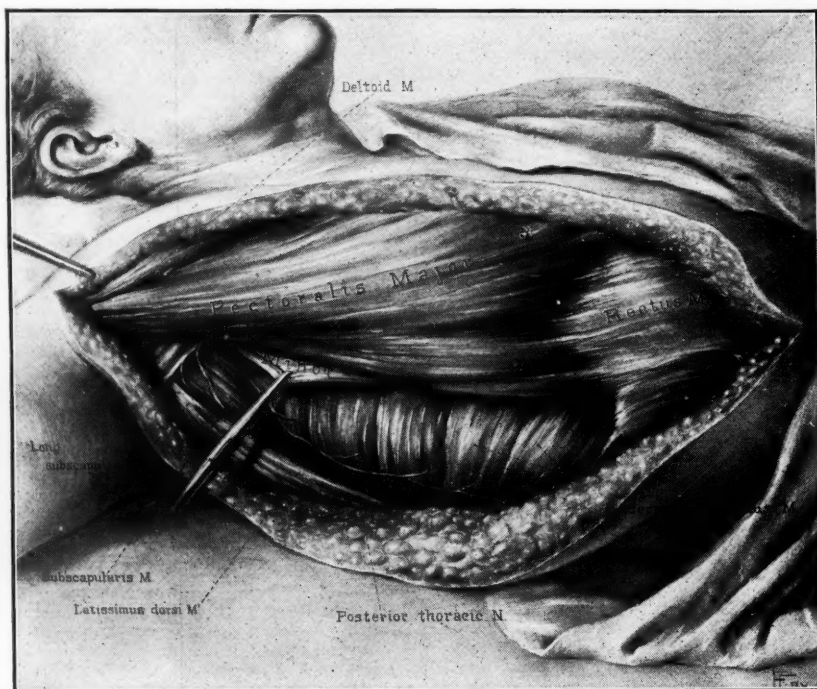
The greater number of patients gave a history of having had previous mastitis and nearly all of them complained of pain. The pain which occurs with chronic mastitis is usually in the

breast itself, does not radiate and is associated oftentimes with soreness and sensitiveness. It is often more marked during menstruation. The radiating pain complained of by the patients having cancer is entirely different in character.

On physical examination, if the breast is taken up between the thumb and forefinger, nodules can be distinctly felt, while if the hand is pressed flat against the breast and the breast compressed against the wall of the chest, these nodules cannot be felt. Quite the opposite is true in cases of cancer as many times the only way a small hard cancerous tumor can be palpated is by compressing the entire breast against the wall of the chest with the flat of the hand. If the breast be lifted up between

by a careful examination, we can make an accurate diagnosis of chronic cystic mastitis in a large percentage of cases. In other words, as a result of our examinations we can tell these patients that they are suffering from chronic cystic mastitis but we cannot tell them that the condition is not associated with an early cancerous process. This is particularly true if the patient consults us at an age when the condition is most likely to be malignant.

Chronic mastitis in itself is benign and except for its evident relationship to cancer and to relieve pain would require no treatment. The unsatisfactory results obtained in operating for well-defined cancer have led us to believe that progress in the surgical treatment of this disease will be made by operating in the



3. Shows conservative operation after removal of breast, gland-bearing fascia and as much of axillary fascia, fat and glands as possible without removal of muscles. Muscles have not been removed. Axillary vessels shown.

the fingers, a small hard cancer lying imbedded in the soft breast will often be missed. The individual nodules in mastitis are usually small and very tense. Pressure on the breast will sometimes force a watery or dark fluid out of the nipple. The nipples may be slightly retracted, though the breasts are always freely movable on the muscles. The nodules of mastitis are freely movable in the tissue of the breast and in this way differ from cancer, since the early process of malignancy, though having no attachment to the fascia of the muscle or skin will show definite attachment to the surrounding tissue of the breast. This attachment and infiltration about the tumor is characteristic of cancer.

By keeping the clinical picture in mind and

precancerous stage or at least in the very early cases.

TREATMENT.

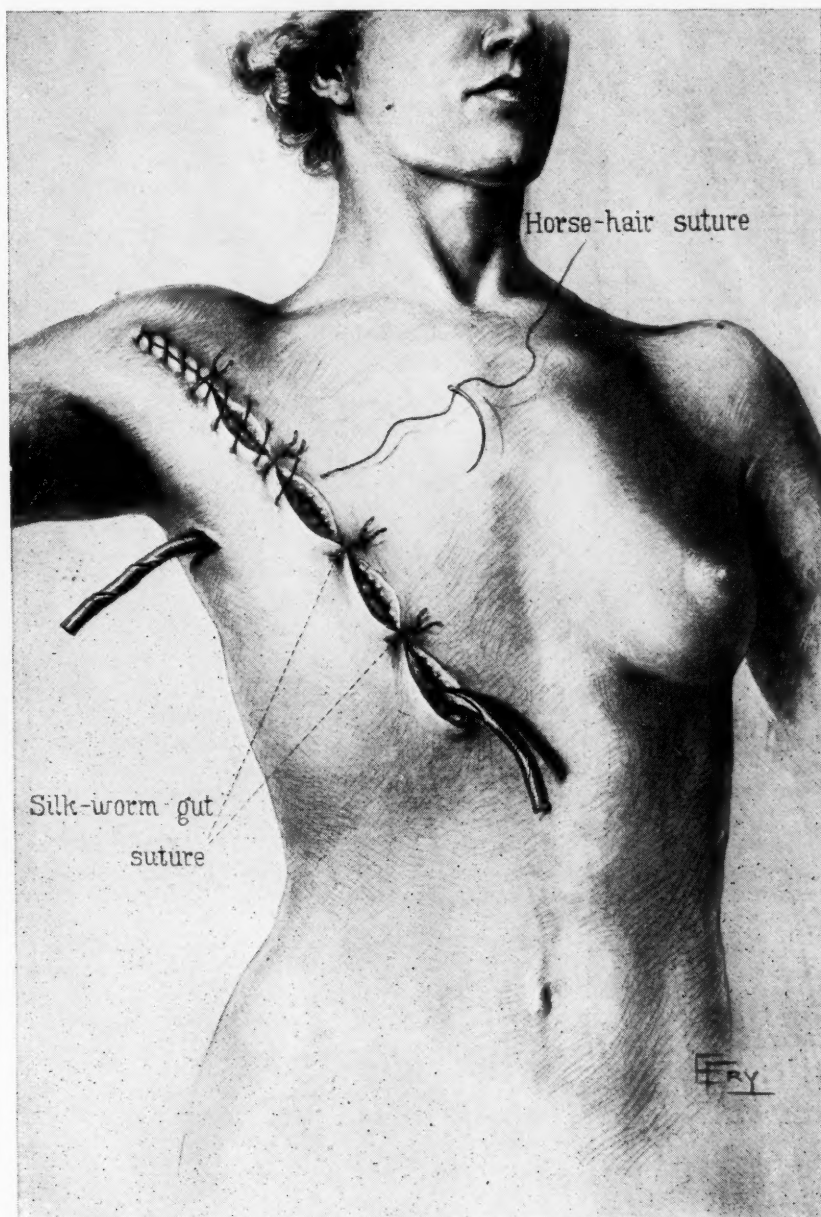
For many years we realized that patients suffering from cancer did not come to the surgeon in time to be cured. Within the last few years, however, since the laity have become aware of the fact that early operations are successful, a noticeable change has taken place in this respect. As Bloodgood has said: "This increases our responsibility greatly, because it is so much more difficult to recognize carcinoma in its early stages and because at this time we should be able to effect a cure in a large percentage of cases." Improved operative technic and more extensive procedures in

advanced cases have failed to improve the results.

Knowing that practically every case of cancer of the breast has associated with it some degree of chronic cystic mastitis and that many of the best authorities believe the condition occurring in women of the cancer age will become malignant in more than half the cases, we con-

Diffuse, painful, nodular enlargement of both breasts in young individuals should not be operated on unless a recent change has occurred in some one of the nodules and then this nodule should be excised for microscopic diagnosis before doing a radical operation.

In view of the fact that medical treatment oftentimes does not relieve these patients, it



4. Shows line of closure, sutures and two drainage tubes.

clude that this condition in all probability is a pre-cancerous stage and that it should be treated as such.

Cancer of the breast has not been observed in the young person under 27 years of age having a bilateral painful mastitis commonly seen in young people. Cancer in these young individuals usually occurs as a solitary nodule and more often as a degenerating fibroadenoma.

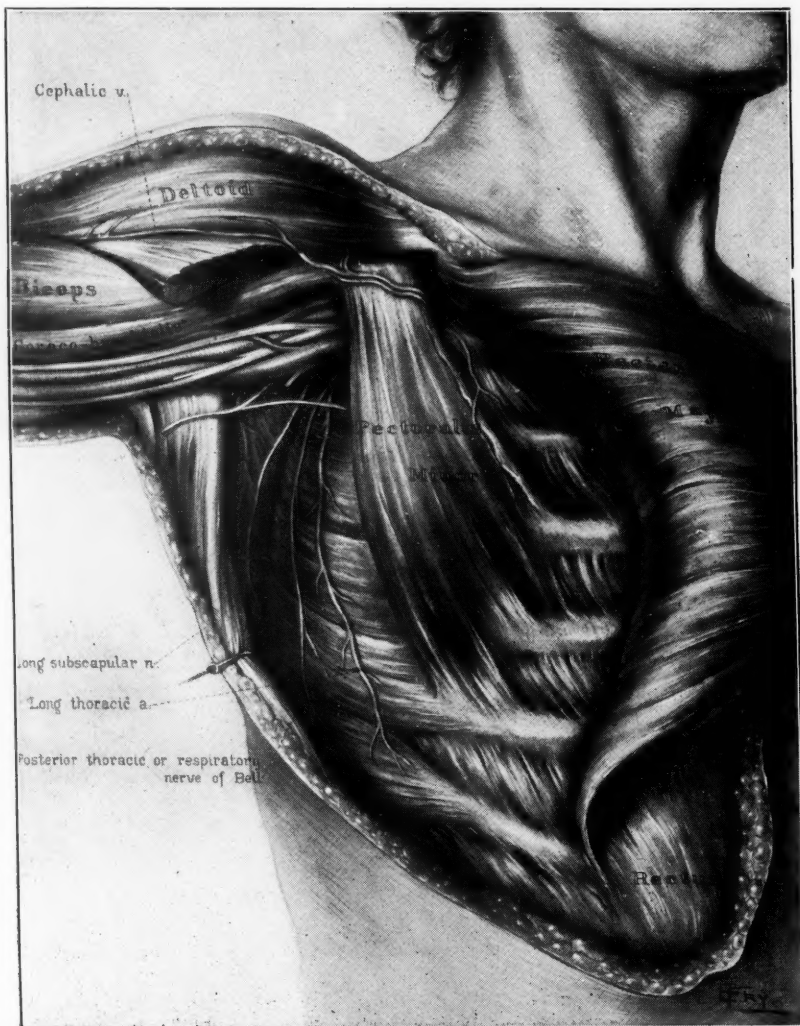
may occasionally be deemed advisable to excise a piece of the breast, preferably by the Warren operation, to relieve their suffering. The result is apt to be rather unsatisfactory, since other nodules may develop and take on the same symptoms. Occasionally it may be necessary to amputate the entire breast because of pain.

Our responsibility would seem to be greater

in regard to those patients coming to us between the ages of 30 and 40. While cancer is not common at this time, yet it occurs in a considerable percentage of the cases. A radical operation for all is the surest method, but in doing this we would undoubtedly operate on many unnecessarily, removing the breast at a time when it is functionally active. It would seem a better procedure in these cases to remove for microscopic investigation the part of the breast which appeared most affected and

incurred considerable risk and promised little or nothing at a time when the gland was lactating and physiologically active. The radical operation has been performed several times when there was doubt in the pathologist's mind as to whether or not the specimen was malignant and it would seem to be the advisable procedure in doubtful cases.

In patients between the ages of 40 and 60, our responsibility is perhaps somewhat lessened since at this time the important function of the



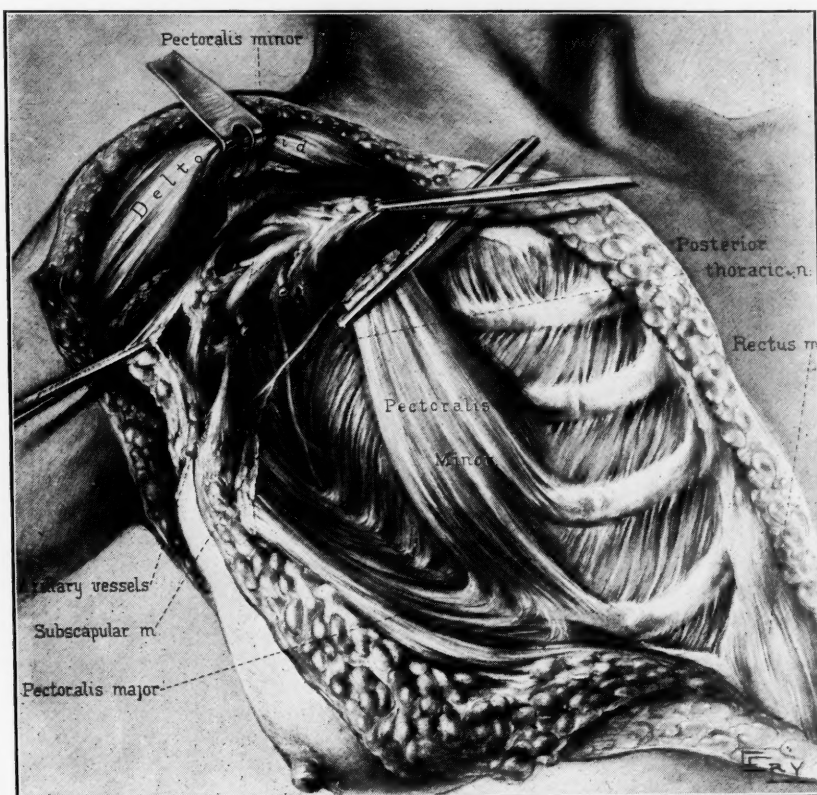
5. Anatomical drawing presented to show difference between conservative and radical operations. Breast has been removed. Pectoralis Major muscle has been divided and reflected. Axillary structures show except where covered by Pectoralis Minor, which has been left undisturbed.

abide by the pathologist's diagnosis, doing a radical operation at the time if necessary. We have followed this plan for many years in several hundred operations on the breast. In only one instance was the cancer missed. This was a case of double suppurative mastitis in a lactating breast; cancer was not suspected nor diagnosed, probably because no part of the malignant tissue happened to be removed. A radical operation was contra-indicated because of the existing infection and sloughing which

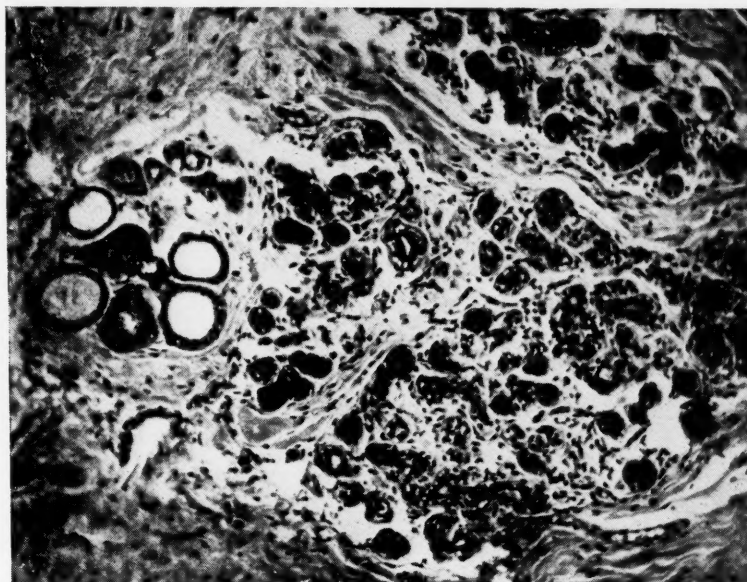
breast has ceased and also we have good authority for believing that a certain percentage of the cases change to malignancy. Chronic cystic mastitis can usually be definitely diagnosed clinically during this period.

Several conditions must be taken into consideration regarding the treatment of this disease when it occurs between the ages of 40 and 60 years: (1) Cystic mastitis is associated with definite malignancy; (2) the mastitis is definite but the malignancy is uncertain; in either case

it would seem best to perform the radical operation for cancer; (3) chronic cystic mastitis in we are dealing with a condition usually associated with cancer and yet, according to the



6. Dissection from life. Presented in order to show enormous difference in exposure of axilla in cases where muscles are removed. Pectoralis Major has had its fibers separated close to deltoid and has had attachments to wall of chest severed. It lies, with breast in lower part of picture. Pectoralis Minor has been cut near its upper attachment, thus greatly increasing exposure of axillary space. Forceps hold a gland and some fascia which lay beneath the minor muscle.



7. Showing almost normal breast tissue with few scattered round cells and perhaps slight increase of fibrous tissue. Several slightly dilated acini show in left end of picture.

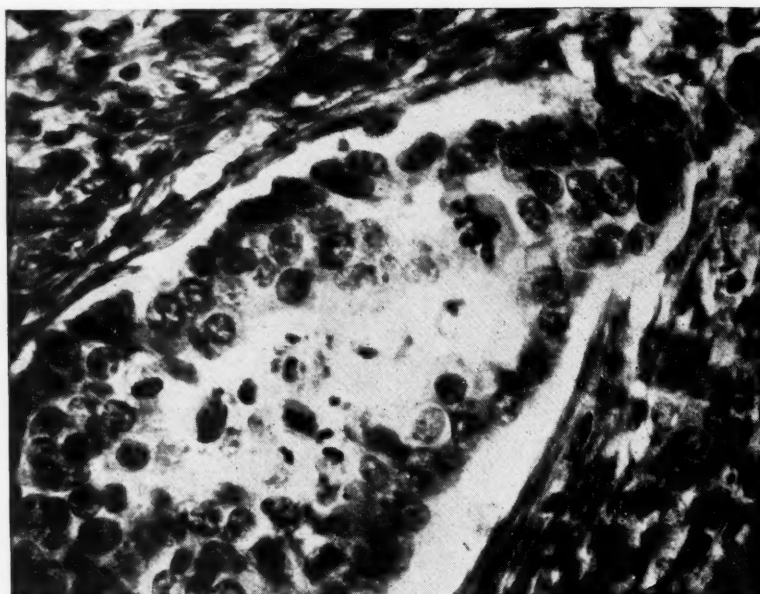
which the pathologists are unable to define malignancy and in which there are no areas suspicious of cancer. In this case we realize that

present status of pathologic knowledge, it is not malignant. A partial amputation of the breast in these cases will not relieve and in many in-

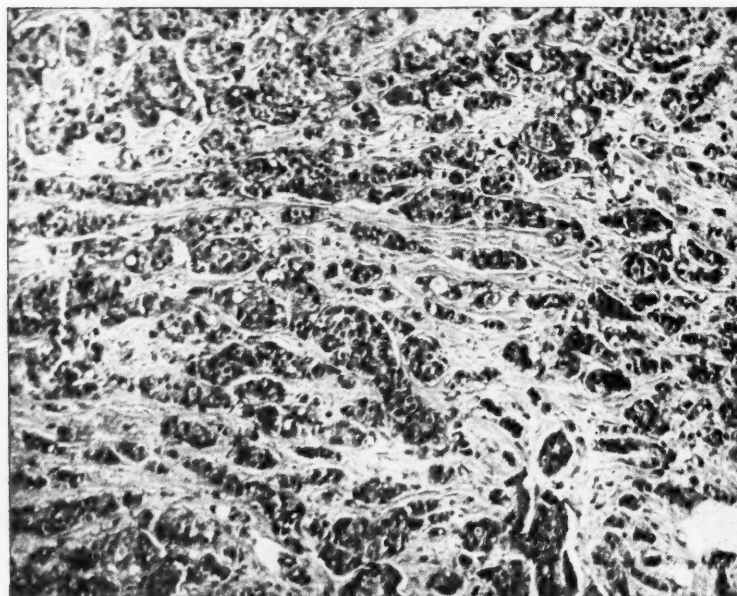
stances the same process will start up in the remainder of the gland—for this reason the entire gland should be removed. The axillary fascia with the glands can be removed without additional risk or inconvenience to the patient and this should be done since it is the avenue

operating on the malignant case, it would seem best to give it due consideration in definite benign conditions.

In 211 of our 218 cases the conservative operation was performed and in none of the cases has there been evidence of malignancy after-



8. Showing cystic mastitis with desquamation of inner row of cells in acini and great increase of fibrous tissue.



9. Schimmelbusch's disease; abnormal involution or senile parenchymatous hypertrophy; adeno-cystic disease; marked increase of cellular element and of fibrous tissue.

traversed by cancer cells. Removing the muscles, as is done in operating for cancer is a more severe procedure and more difficulties occur during convalescence. At times permanent limitations of motion and swelling in the shoulder and arm occur and while this interference in function should not be considered in

ward. In the remaining seven cases of doubtful malignancy, the radical operation was performed.

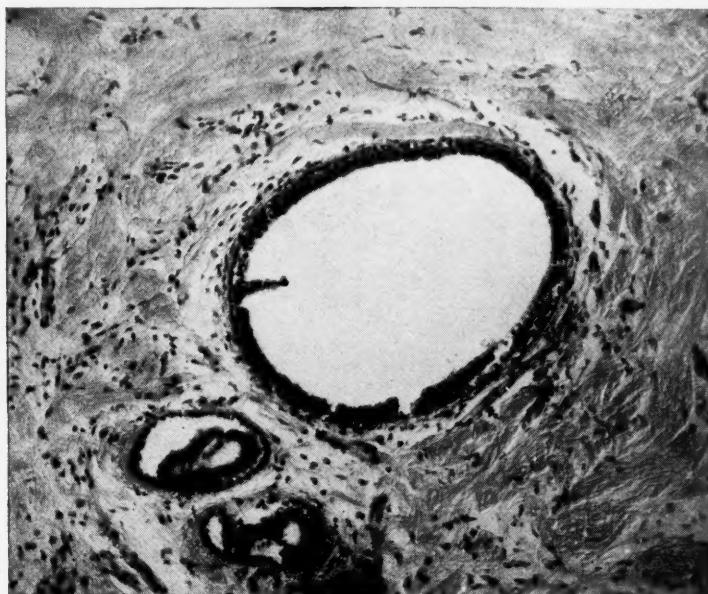
CONCLUSIONS.

In conclusion it may be said: (1) I believe chronic cystic mastitis has a definite relation-

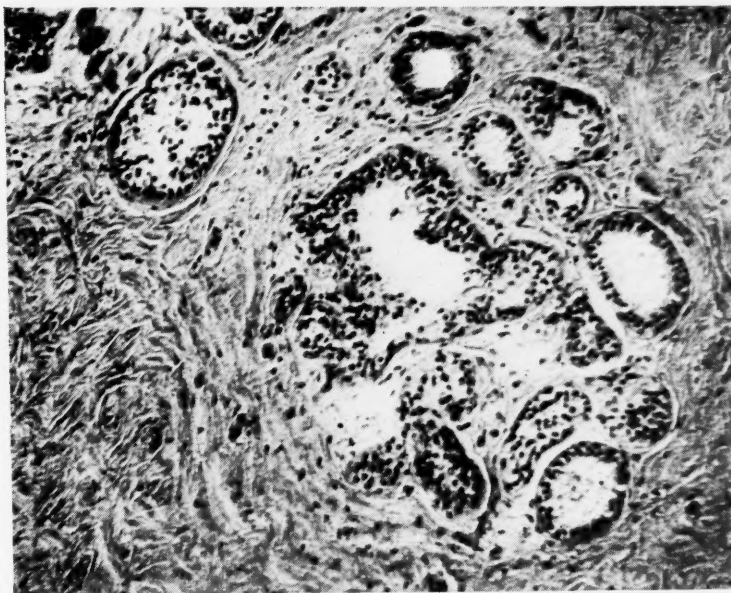
ship to cancer of the breast and in many instances may be considered a precancerous condition. (2) In cases suspicious as to malignancy, a radical operation for cancer should be performed. (3) In cases of chronic cystic mastitis that cannot either clinically nor patho-

the old term that Gaines gave to this disease is wrong.

In early cases where you see this disease occurring in women along about 30 to 35 years of age it has been my experience, in these cases, that they are then to be looked after, and it seems to me that the conservative operation is the operation to do. In these cases I have done, in some instan-



10. Same under high power, showing a single acinus with cells enlarged. Several Karyo Kinetic figures show and, in the center, some destroyed cells.



11. Typical carcinoma. Rows of carcinoma cells. Much increase of fibrous tissue.

logically be diagnosed as to malignancy, the conservative amputation with removal of the gland-bearing fascia is the operation of choice.

DISCUSSION.

DR. DEAN LEWIS:

Mr. Chairman, this is an exceedingly valuable paper. I think it has been definitely settled that

ces, Warren's operation, dissected the breast, up off the pectoralis major muscle and removed the cyst from below. I have been much disappointed in this operation. I find that even after Warren's operations cysts have appeared in other places.

Dr. Judd has had a large experience from having viewed a number of cases, and is able to draw different conclusions as to the character of the disease; and his observations of course are very valuable.

DR. DODGE.

Mr. Chairman, I wish to express my appreciation of the very excellent paper. I fully agree with the method of treatment, in cases of chronic cystic mastitis. It has been my experience as far as the removal of the breast is concerned, in early stages, you remove some of the cyst, and in a few months you will have the patient come back with a recurrence of the cysts throughout the breast. So I think that the removal of the breast is necessary in those cases.

I am very glad that we not only have had Dr. Judd, but so many distinguished surgeons this year from various parts of the country. I think we have had a very enjoyable session, and we are in deep gratitude for them for honoring us with their presence. As Dr. Judd has so well expressed, even in the mind of the pathologist, after removing cysts there was always some doubt whether they were malignant or not malignant. Frequently people come to your office with a little trouble in the breast and ask you if it is a cancer or not. You cannot say. But I think if you see a person, over thirty-five years of age coming to you with an enlargement of the breast, even if it is not a cancerous condition, it ought to be out. I have seen some disastrous effects from these conditions. I saw a lady about two years ago with chronic cystic mastitis, she was about thirty-six or thirty-seven years of age, and she became pregnant and nursed the child, and three or four months after came back with a double carcinoma—showing that it is very dangerous. I remember a while ago some celebrated surgeon advocated tapping them with a needle, and if he found fluid, then he took them out, and if not he left them there. But I think even if the fluid is not there they ought to be removed.

DR. VAUGHAN.

Mr. Chairman, I have been very much interested in this most excellent paper. There is one thing that I have a little hesitancy about saying, because it seems to be generally conceded, and it is a very important thing at present, and I hate to refer to it—and that is upon operating in these cases—the precancerous stage. What is the precancerous stage? We see very few of them in the precancerous stage. The physician who takes care of the patient sees very few cases before carcinoma is actually there. That is especially true of the type that departs from the small adema. Now, we operate radically on cases of very small tumors; and very shortly afterwards we find a recurrence. You take another case with the tumor as large as your fist, or your two fists and you remove that rapidly, and in that case it does not recur for three or four or five years. I have had that happen several times. What is the explanation? In one case you get at it early, and still you have an early recurrence; in another case you get at it late, and still you get no recurrence for some considerable time. If you make blood counts in those cases you will find invariably that the case that does not require as large a mononuclear leucocyte count or a low mononuclear leucocyte—the case that does not require as high a polymorphonuclear leucocyte count. In other words, nature herself is preventing that case from recurring. It is not the extent of your operation; it is not the radical way in which you perform the operation. It is nature herself. The tendency is in every case of cancer for the body to cure it just as it is in an infectious disease. By experiment we can prove that we can produce a temporary cessation of cancer by injecting a small amount of cancer serum. If we inject a larger amount, or increase

the large amount of leucocyte, we kill our animal. The animal is sensitized; it is sensitized in from thirty-four to thirty-six hours. The reason we do not cure cancer by operation is because nature does not help us; the sensitization is not of long enough duration.

DR. JUDD.

I have not anything further to say except that I do not think any of us are very enthusiastic about operating upon cancer. I always think as Dr. Cooper said, we are not satisfied by the surgical work on cancer; still at the same time it is the best treatment we have and it is the only treatment that has shown results; so that we must continue in it, and be more or less enthusiastic about it until something better is shown us.

X-RAY EXAMINATION OF THE LUNGS*

A. W. CRANE, M.D.

KALAMAZOO, MICH.

A routine and systematic plan of examination is desirable. The x-ray examination should be the final one. The physical examination by inspection, palpation, percussion, and auscultation should be no less thorough because the Roentgen ray is to follow. If there be a sputum it should be examined in every case. The examination should be begun with the fluoroscope. If there be a condition present which, on account of its interest or its obscurity, is worthy of a skiagraphic record or delineation, then a plate may be exposed. The fluoroscope is superior to the single skiagram in the examination of the lungs. But a pair of stereoscopic plates of the chest endows the observer with a diagnostic vision incomparably superior to that of any other method.

POSTURE.

It is best to examine the patient first in a standing position on account of the possible presence of partly-filled cavities or pleuritic effusions. A front and back view of the upper, middle and lower thirds of the lungs may be taken. We should compare like parts of the two sides, and different areas of the same side. We should observe the heart-shadow and the diaphragm-line. We should notice if any unusual condition exists, such as aneurysm or tumor.

FLUOROSCOPE.

A familiarity with the fluoroscope appearance of the lungs in health is an unqualified necessity to the examiner. With the fluoroscope, practice makes perfect; precisely as in auscultation and percussion, or with the microscope and the ophthalmoscope. The eye should be refreshed by a frequent view of healthy structures.

In studying the lungs it makes a difference whether we take a front or a back view. This difference depends upon the fact that the closer

* Read before the Section on Medicine, 48th Annual Meeting, Michigan State Medical Society, Flint, Sept. 4-5, 1913.

any structure lies to the fluoroscopic screen, the clearer the shadow. In front, the ribs being cartilaginous, show but faintly; while the ribs and shoulder blades at the back, being distant, are also faint, so that a fairly unobstructed view of the lungs may be obtained. The sternum and vertebrae form a dark column down the middle. From this central column, the heart extends to the left, lying in constant motion upon the diaphragm; while the diaphragm on each side forms an arch like a quarter circle, rising and falling with each breath. The boundaries at the sides and apices of the lungs are easily discernible because the chest-wall is viewed edgewise and is thus relatively thick.

When the patient is turned about and the fluoroscope is placed against the back, the ribs are clearly visible, so that the lungs must be viewed through the interspaces. The broad, scapulae lying close to the fluoroscope screen cast shadows which also interfere with the examination. Nevertheless, the back view often gives the best image of a diseased area because the front ribs are both cartilaginous and distant, thus being largely eliminated as disturbing factors.

The examination of the lungs by the x-rays should be done by preference in the evening. Pulmonary fluoroscopy in the daytime is not a success unless the room can be made absolutely dark. Curtains and blinds are rarely sufficient. It is surprising how great a difference a little daylight makes in such an examination. It is the sensitiveness of the retina which is the real consideration. If for any reason the examination must be made in the daytime, the physician should first rest his eyes in the darkness. Fifteen minutes is not too long a time; indeed it may often be insufficient for the best results.

In disease the fluoroscope chest-picture is changed. Shadows of varying density may appear; abnormally clear areas may develop; the heart-line or diaphragm-line may become displaced, obscure, or invisible; and the motion of the diaphragm may be restricted or reduced to zero. These appearances must be interpreted in any given case to mean infiltration, consolidation, cavity, effusion infarct, etc.; and these conditions must be combined and interpreted to mean tuberculosis, pneumonia, pleurisy, edema, etc. The ultimate factors of a fluoroscopic examination, then, are extremely simple; transparency, shadow, and motion. Upon these three rests the most elaborate examination by the x-rays.

INTERPRETATION.

As we reduce fractions to a common denominator, we may reduce light and shadow to the common terms, increased transparency and decreased transparency. Either increased or decreased transparency may differ in intensity,

position, form, and extent. The third factor, motion, may likewise differ in character and extent and in the method by which it is elicited.

When we apply these qualifying factors to the interpretation of chest-images the problem of our three simple factors, like the problem of three bodies in astronomy, becomes less simple. Their interpretation requires experience. However, a good medical education combined with a general acquaintance with the x-ray examination, will enable the average man to predict with reasonable certainty what may be found on the skiagram in any given pulmonary disease. In those diseases in which there is an increased amount of air in the lungs on one or both sides, we would expect to find with the fluoroscope an increased transparency of one or both lungs. This is discovered to be a fact in asthma and emphysema. In those diseases in which there is a diminished quantity of air in the lungs we would expect to find under the x-ray, a diminished transparency. This we find to be true in congestion, pneumonia, tuberculosis, and many other diseases. Focal diseases, such as abscesses, infarcts, and tumors, would be expected to cast shadows comparable to their size and density.

It is the density of a focus which determines the density of the shadow. There must be more substance in the path of the ray if there would be decreased transparency. Lack of air alone in the lungs would not account for this decreased transparency during expiration. The settling-together of the lung-tissue in expiration contributes something to lung-density, but, as Williams suggests, there must also be an increased quantity of blood and lymph in the lungs to account for the change mentioned. Likewise in any point of inflammation there is an increased blood supply. The tissues may be soaked with serum and infiltrated with leucocytes. The air-cells even may be filled with exudate, and thus the density of a part is increased, and its transparency under the x-rays decreased. A substance may be transparent to ordinary sight and cast shadows under the x-rays. Glass and water are examples. Density, with the x-ray, is the criterion. Clear serous effusions cast black shadows on the fluoroscopic screen.

When the x-ray examination is preceded by the physical examination an opportunity is given to compare and supplement the results one by the other. The end-result of roentgenography must agree with the end-result of the physical examination, if the phenomena observed are correctly interpreted. But the information elicited by inspection, palpation, percussion and auscultation is not in each case co-extensive with the information gained by the fluoroscope, and x-ray plate.

By palpation we may feel the rhonchi, the

friction fremitus, and the vocal fremitus. The rhonchi and the friction fremitus denote conditions which give no x-ray sign. The vocal fremitus is increased over consolidated areas and decreased over emphysematous areas. In this it agrees exactly with skiascopy. If, however, we draw the conclusion that whenever the vocal fremitus is increased we should find an increased density in the fluoroscopic shadow, and *vice versa*, we will be disappointed. In pleuritic effusions we find the vocal fremitus decreased or absent, but we find the fluoroscopic shadow dense and unmistakable. The same is true of pleuritic thickenings, of filled cavities, and of consolidations with occlusion of the large bronchi. Moreover, the vocal fremitus is increased over dense-walled cavities which would give a ringed area of light-reflex upon the fluoroscopic screen. In these states it could be said that the results of palpation are not parallel with those of roentgenography. It is simply that the narrow limits of palpation must be kept in mind, and only its positive data considered.

Between percussion and skiascopy the comparison is more satisfactory. The same factors which determine the x-ray shadows, also determine the character of the percussion note. The results of percussion and skiascopy must agree, allowing for the personal equation and for the superior delicacy of one or the other in different hands. In my experience they do agree, except that skiascopy is the more delicate and precise method.

The field of auscultation is larger in some directions than that of pulmonary skiascopy. Affections of the bronchial tubes denoted by rales, and inflammations of the pleura denoted by friction sounds, are beyond the province of the x-rays. Auscultation is a most delicate method of examining the thorax, and the data which may be elicited are numerous. But their interpretation is often a matter of confusion or doubt. Changes in the vesicular breathing, bronchial breathing, amphoric breathing, broncho-vesicular breathing, rales, large, small, dry, moist, sonorous, sibilant, crepitant, sub-crepitant, mucous or bubbling; friction sounds, bell-tympany; succussion metallic tinkling; bronchophony; pectoriloquy; egophony; Wintrich's change of sound; Williams' tracheal tone; Gerhardt's change of sound; Friedreich's change of sound; and Leitz's metamorphosing; all of these suggest the resources and difficulties of auscultation.

Roentgenography gives more simple and direct data. The apparatus which generates the Roentgen rays may be complex, but there is nothing unduly complicated about shadows on the fluoroscopic screen. The shadow of a bottle partly full of water gives more simple and more direct evidence of its existence and character

than do the sounds which may be elicited from it. The margin of possible error is wider for the stethoscope than for the fluoroscope. But when the signs are correctly elicited, correctly recognized, and correctly interpreted, the results of auscultation must agree with those of roentgenography.

Roentgenography is not compared with inspection because it is itself inspection. It is an extension of our faculties of sight. It is, therefore, a part of the physical examination and not a method to supplant it. Although it bears comparison with the combined results of palpation, percussion, and auscultation, it should not be considered as a rival, but as an ally. By Roentgen's discovery inspection is now raised to the first rank of our diagnostic resources. We base a diagnosis, not upon the results of one, but upon all the lines of physical examination. Auscultation is not alone relied upon. For the same reasons skiascopy should be interpreted in conjunction with the physical signs and the clinical symptoms. We never need, like Paganini, to execute our score upon a single string.

CHART I.

ROENTGEN EXAMINATION

LUNG and PLEURAL SAC:

Increased transparency

1. General

a. Bright or light reflex

1. Pneumothorax
2. Emphysema
3. Compensatory emphysema

2. Local

a. Bright or light reflex

1. Empty cavities
2. Pneumothorax
3. Bronchiectasis

Decreased transparency

1. General

a. Light shadow

1. Generalized pleurisy
2. Congestion of lung

b. Dark shadow

1. Edema
2. Cirrhosis

c. Black shadow

1. Effusion to apex
2. Total consolidation

2. Local

a. Light shadow

1. Infiltration
2. Thickened pleura
3. Atelectasis

b. Dark shadow

1. Partial consolidation
2. Small filled cavities
3. Pleuritic exudates
4. Small tumors
5. Infarcts

c. Black shadow

1. Consolidation
2. Pleuritic effusions
3. Gangrene
4. Large filled abscess
5. Large tumor
6. Large hydatid cyst

Motion

1. General
 - a. Changes in density
 1. During respiration
2. Local
 - a. Changes in form
 1. Of half filled cavities
 2. Line of thickened pleura
 3. Effusions

DIFFERENTIAL DIAGNOSIS.

Differential diagnosis in skiascopy is a matter of transparency, shadow, and motion. A transparency indicates a large, empty cavity or a large pneumothorax. If it is a cavity, the transparency may be centrally located and wholly surrounded by a dark or black shadow, or it may be peripherally located and only partly surrounded. The limits of a large cavity are never sharply marked unless on the lower side, when partly filled with sputum. If it is a pneumothorax, the transparency is peripherally located and usually larger than in the case of cavity. If it exists without the presence of pulmonary shadows, the diagnosis is clear, because cavities are always associated with some consolidation. If, however, consolidation does occur with pneumothorax, the outline of the lung will be observable. A local pneumothorax from bronchial communication with the pleural sac and from circumscribing adhesions, could not be distinguished from a peripheral cavity, especially if it occurred over the front or back area. Its position, however, whether front or back, could be determined. The closer any object lies to the fluoroscopic screen the cleaner the image.

A circumscribed moderate transparency indicates a small cavity; a large cavity nearly full, a small pneumothorax, a greatly dilated bronchus, or an emphysema. If it be a small cavity, it will lie in the midst of a dark or black shadow, and may be called a light reflex, because it is in contrast with its surroundings. It may be encircled by a narrow ring of dark or black shadow if the walls are calcified. This is a healing process that can occur in a small cavity only. Why the calcareous thickening of a spherical cavity will cast the shadow of a ring is easily understood. The x-rays traverse more substance in passing through the edges of the rim than in passing through the middle.

If it be a large cavity nearly full, the transparency will rest upon a dark or black circumscribed shadow, unless the surrounding consolidation is so dense as to obscure the shadows of the mass of sputum. If the patient is re-examined on the table, the cavity may empty and become a large bright transparency or it may nearly disappear, because the mass of sputum has come to lie in line with the empty space. If a faint reflex be observed without the presence of pulmonary shadows, it is likely

due to a dilated tube in bronchiectasis. A dilated bronchus with consolidation could not be distinguished from a small cavity, unless a longitudinal form were to give a clue. A small pneumothorax, allowing a layer of air to surround the lung, would give a general light reflex, which would be distinguishable from a true emphysema by the profile of a lung made denser by partial collapse. In both cases the movements of the diaphragm would be restricted, its line low and its form flattened. But an emphysema is bilateral, unless there is some disease of one side to produce a compensatory condition on the other. In the case of pneumothorax, the disease would be on the same side as the general transparency. Hydro-pneumothorax or pyo-pneumothorax would give the same images as pneumothorax, except that we would have the dense shadows of effusions at the base. By changing the position of the patient, the relative position of the shadows and transparencies would be changed.

A light shadow may mean an infiltration, a congestion, an atelectasis, or a thickened pleura. Between a tuberculous infiltration, a simple focal congestion, and an atelectatic area, there is no shadow-distinction. A thickening of the pleura may sometimes be differentiated from these three if its shadow be plainly visible, say from the front, and nearly or quite invisible from the back. But an infiltration or small consolidation lying close to one side would simulate this appearance.

A dark shadow indicates a partial consolidation, a small tumor, an infarct, or a cirrhosis. In the case of edema the dark shadow is general and of even density. A general cirrhotic lung would give a less even shadow, and would be accompanied by a marked displacement of the heart. Other physical conditions easily differentiate these two. A focal cirrhosis, an infarct, and a small tumor, may give shadows of similar character, but a cirrhotic focus is most likely to be located in the apex; a tumor most likely near the hilum; and an infarct most likely in the periphery of the lung. A partial consolidation has very indefinite borders shading out into normal lung tissue. A small filled cavity is associated with some consolidation, and will appear as a dark spot in the midst of a dark shadow.

A black shadow may result from a consolidation, gangrene, large filled abscesses or cavities, large tumors, large hydatid cysts, and pleuritic effusions. The last is distinguished by lying at the base of the thoracic cavity, by obscuring the diaphragm-line, by a more or less level upper border, and by being shifted when the patient's position is changed. The other conditions may not be separable by an x-ray examination, although their boundaries may be mapped out.

CHART II.
ROENTGEN EXAMINATION
DIAPHRAGM

Visibility

1. Increased
 - a. Inspiration
 - b. Emphysema
 - c. Pneumothorax
2. Decreased
 - a. Expiration
 - b. Edema
 - c. Congestion of the lower lobe
 - d. Consolidation of lower lobe
 - e. Thickened pleura at base
 - f. Pleuritic effusion or exudate
 - g. Empyema

Position

1. Low
 - a. Emphysema
 - b. Asthma
2. High
 - a. Cirrhosis
 - b. Tuberculosis
 - c. Abscess of liver
3. Difference of the two sides

Form

1. Arched
 - a. When high. See above
 - b. Abscess of liver
2. Flat
 - a. When low. See above
3. Irregular
 - a. In diaphragmatic hernia
 - b. Hepatic abscess beneath diaphragm
4. Difference of the two sides

Motion

1. Ordinary respiration
 - a. General range
 1. Restricted
 - a. Tuberculosis
 - b. Pleurisy
 2. Exaggerated
 - a. Compensatory Emphysema
2. Forced respiration
 - a. General range
 1. Restricted
 - a. Tuberculosis
 - b. Pleurisy
 2. Exaggerated
 - a. Compensatory emphysema
 - b. Upper half
 1. Restricted
 - a. Emphysema
 - b. Asthma
 - c. Pleurisy
 2. Exaggerated
 - a. Compensatory emphysema
 - c. Lower half
 1. Restricted
 - a. Tuberculosis
 - b. Pleurisy
 2. Exaggerated
 - a. Compensatory emphysema

THE DIAPHRAGM.

The diaphragm cannot be disregarded in skiascopy of the lungs. Its visibility, position, form and motion are functions of the highest importance in estimating the extent and sever-

ity of pulmonary disability. It is the vital barometer of the lungs, and may give the first signs of coming clouds above.

Its visibility depends upon the contrast which its heavy shadow makes with the thin shadow of the lung. It is a dome of muscle which rests upon the liver on the right and is visible across the whole extent. On the left it rests upon the stomach and is visible across the outer half, the inner half being obstructed by the shadow of the heart. In forced inspiration, however, the diaphragm becomes also visible below the heart. The shadow-line of the diaphragm becomes more distinct in forced inspiration because the lungs contain more air and because the diaphragm, being flatter, interposes more tissue in the path of the rays. Conversely, the diaphragm-lines become less distinct in forced expiration, because the lungs contain less air, and because the diaphragmatic dome, being more arched, interposes less tissue in the path of the rays.

The diaphragm becomes very distinct when there is an emphysema or pneumothorax without effusion. But emphysema is either bilateral or else compensatory and attended by disease on the opposite side. On the other hand, pneumothorax would show the shadows of a partially or wholly collapsed lung. The diaphragm may become indistinct in edema, hypostatic congestion, partial consolidation of the lower lobes, or thickened pleura around the base. But, in edema there is a general shadow of even density. In congestion, partial consolidation and thickened pleura at the base, the upper areas of the lung may be normal. But these three are not separable on physical grounds alone.

The diaphragm becomes invisible when there is an effusion or a consolidation of the lower lobe. But with effusion the outline of the shadow may be easily shifted, and when the patient is placed upon the examining table with the head lowered, the diaphragm comes into view. If the entire lung is consolidated or if the effusion reaches to the apex, the conditions may be indistinguishable without the use of the hypodermatic needle.

The position of the diaphragm in health is variable. The mean in the ordinary respiration is, for the right side, the lower border of the fifth rib, and, for the left side, the upper border of the sixth rib. The left side is normally about 1½ cm. lower than the right. In disease of one side this difference is exaggerated. If the right lung is affected by tuberculosis, the diaphragm on that side will be higher than usual, while on the left it will be lower than usual, on account of the compensatory changes. In emphysema the diaphragm lies very low, in cirrhosis very high.

The position of the diaphragm largely de-

termines the form. It is flattened when low, and arched when high. In diaphragmatic hernia the form is irregular.

It is the motion of the diaphragm with which we are chiefly concerned. We may recognize the range of movement in ordinary and in forced respiration. By marking the middle point in ordinary respiration, we may observe the upper and the lower half of a forced respiration. As a rule, in health the range of ordinary and forced respiration is slightly greater on the right side than on the left. A restriction in the range of motion is a sign of some disablement. It is most likely to mean tuberculosis, pneumonia, or pleurisy. But it may mean almost any affection of the lungs or mediastinum. In true emphysema and pneumothorax the respiratory movement is restricted in its upper half. In compensatory emphysema the respiratory movement is increased in both upper and lower half. This is important, because a compensatory emphysema on one side means an impairment of the lung on the opposite side. It may, however, in rare cases, be an old trouble from which the patient has recovered. A very marked restriction in the motion of the diaphragm or its immobilization is a grave sign. Pleurisy, especially diaphragmatic pleurisy, forms an apparent exception. However, if the patient be encouraged, the diaphragm can be moved, although pain is the result. It is a significant fact that nature so quickly immobilizes a diseased lung.

When in addition to the shadow-free lung, we find a natural movement of the diaphragm, we may feel assured that even though tubercle bacilli are present in the sputum, the prognosis is good.

THE ATTITUDE OF THE GENERAL PRACTITIONER TOWARD THE TUBERCULOSIS PROBLEM *

JOHN B. JACKSON, M.D.
KALAMAZOO, MICH.

Apropos of the modern anti-tuberculosis campaign, a physician recently made the remark that it is time to stop educating the public and turn our attention to educating the physician. A great deal of very useful information concerning the nature of tuberculosis has been given to the public in the last ten years. Most intelligent people know that tuberculosis is a specific disease caused by the tubercle bacillus; that the disease is spread by this germ; that an early diagnosis is desirable; and that some patients recover from this disease. The work of the local, state, and national societies has interested many people in the

fight against this disease, and much money from both private and public sources is being given to prevent its spread. It is certain that if in this campaign of education there is urged on the public the necessity of early diagnosis and frequent consultation of the physician, a great responsibility is put upon the medical profession. It is possible that we have reached the point where the educated public expects more from the profession than it is receiving. It seems to me that it is true that the effort to stop the spread of tuberculosis is being most seriously hampered by the lack of an aggressive co-operation on the part of a large number of physicians. When physicians fail to render the service which a public, educated by the modern anti-tuberculosis campaign, expects and demands, it is time for the profession to take notice and consider what should be our attitude toward this greatest of all hygienic problems. It is the purpose of this paper to discuss briefly what this attitude should be and to point out some of the respects in which we are failing in what may be expected of us.

TUBERCULOSIS IS CURABLE.

If there is one thing which should be emphasized in connection with the educational feature of this fight, it is that incipient tuberculosis is curable. The doctor is the one above all others to teach this lesson. Patients must understand that a diagnosis of incipient tuberculosis is not a death warrant. Many people will not believe that tuberculosis is curable, because in their observation doctors have not diagnosed the disease until the chance for recovery has gone by.

Some physicians seem positively unwilling to make a diagnosis of early tuberculosis. The reason for this is that they do not really comprehend the full significance of the fact that a large percentage of patients afflicted with tuberculosis recover from the disease. Under favorable conditions an immunity is established and the patient recovers. Considerably over 90 per cent. of all subjects coming to autopsy show either healed or active tuberculosis. Of this number no one can say in how many the disease has progressed far enough to produce symptoms, but it is reasonable to suppose that the majority of those have had at some time clinical manifestations of the disease. Tuberculosis kills probably not more than 10 per cent. of those who show lesions at autopsy. This teaches us then, that the tendency is toward cure, that with or without treatment a large number of those afflicted will recover. Notwithstanding this, many physicians seem to be timid about making a diagnosis because the patient may get well. They somehow either consciously or unconsciously feel that a recovered case is a proof of error in

* Read before Section on General Medicine, 48th Annual Meeting Michigan State Medical Society at Flint, Sept. 4-5, 1913.

diagnosis. If we appreciate the curability of this disease, such a consideration will not stand in the way of a diagnosis based on accurate clinical and laboratory findings. We must expect our patients will get well and learn to associate a good prognosis with an early diagnosis.

EARLY DIAGNOSIS.

An aggressive policy on the part of the physician must include an effort to reach an early diagnosis in all cases coming for examination. Many physicians are unwilling to diagnose tuberculosis from physical signs. A very large percentage of them still consider the demonstration of *tubercle bacilli* in the sputum as the *sine qua non* of diagnosis. The physician who bears in mind the wide spread prevalence of this disease, as shown by autopsy records, must hesitate to make an unqualified negative diagnosis in any patient who comes to him with clinical symptoms suggesting tuberculosis. It is not my purpose to enter into a discussion of the methods of diagnosis of incipient cases; but I should like to make a plea for the using of every means that is available for making an accurate diagnosis in every suspicious case. A careful family history, clinical history of the patient, repeated physical examinations and observations of pulse and temperature, repeated sputum examinations, tuberculin tests, animal inoculations, and X-ray examinations are means which should be made use of in every case in which there is danger of overlooking a tuberculous focus. Contrast this with the attention that many incipient cases receive. They go to the physician, who may make one examination, may make or have made one sputum examination and then tells the patient that the trouble is bronchitis or catarrh or something else. The patient receives this news gladly and goes on about his work, losing the opportunity of arresting the disease in its incipency.

Tuberculosis will never be effectively prevented if physicians continue to postpone positive diagnosis until the disease has arrived at an advanced stage and *tubercle bacilli* are found in all specimens of sputum. Where *tubercle bacilli* appear in the sputum, the case is an open one and the disease has become a danger not only to the patient but also to those with whom the patient is associated. There is, of course, a possibility of doing an injustice to a patient by making a wrong diagnosis. The presence of tuberculosis means that he must make certain changes in his mode of life. It often involves a radical change. We should not make such a diagnosis without good reasons. But it would be better, if we must err, to cause ten patients the inconvenience of getting into habits of correct living rather than

to let one patient unnecessarily succumb to the disease and in so doing infect many of his family and associates.

SOURCES OF INFECTION.

Another way in which the physician may be aggressive is in searching for sources of infection. If a patient is suspected of tuberculosis, in many cases it is possible to demonstrate the source of infection. If the physician does not take pains to find this out, it will probably not be done. Health departments are often unable to carry out such investigations. In many cases one may find that an infected house is the source of trouble. Most physicians who have given the matter attention have observed cases of this sort. Sometimes an office or a factory may be the source of several cases. If every physician who diagnosed a case of tuberculosis, instead of being content with diagnosing the particular case, would investigate such possibilities, and, having found out their existence, would acquaint the proper authorities, a great deal would be accomplished.

Family infections have long been observed, but physicians often show a strange lack of appreciation of their significance. One case of tuberculosis in a household should make the physician suspicious of every other member. He should recommend and insist on examination of the entire household. The usual policy of waiting until other cases have developed into an advanced stage before examination and diagnosis is frequently due entirely to lack of a proper attitude on the part of the physician toward the problem of the extermination of tuberculosis.

The physician is often brought to the consideration of cases which he suspects are chronic carriers of tuberculosis. We are all familiar with the fact that many persons go about for years with open tuberculosis without very much impairment of the general health. These persons take their cough and expectoration as a matter of course. They attach no significance to it whatever, and yet their expectoration is a constant menace to those with whom they are associated. How shall these cases be brought under observation and their true condition made evident? Surely the family physician has a responsibility in this matter. If he does not make an honest effort to bring these cases to light they will continue to act as carriers. Frequently these persons never apply for examination, but the physician is summoned to treat some other member of the family. Often by the exercise of tact and judgment these cases may be subjected to examination. The question of ethics and shrinking from urging one's professional services on such a subject really ought not to interfere with an effort to find out these carriers of infection. At

least the physician who does not seek to use fair and wise means of demonstrating these cases, does not discharge his entire duty in the fight against tuberculosis.

CONCLUSIONS.

The points attempted in this discussion may be summarized as follows:

1. The anti-tuberculosis fight is being seriously hampered by a lack of co-operation on the part of many physicians.
2. Physicians do not appreciate the curability of incipient tuberculosis.
3. Early diagnosis is often not made because of lack of thoroughness.
4. Sources of infection are often overlooked on account of lack of interest on the part of the doctor.
5. Family infections are not investigated as they should be.
6. Chronic carriers are allowed to go on infecting others.

CANCER AND A PLEA FOR EARLIER DIAGNOSIS*

SIMON LEVIN, M.D.

Calumet & Hecla Mining Company Hospital Staff.
LAKE LINDEN, MICH.

The appalling increase of cancer, and the unfortunate and deplorable states in which women and men come to us for diagnosis, in whom we find far advanced, inoperable growths, beyond any modern method of treatment, is a sufficient plea for the title of this paper this evening. Therefore, I wish to bring before you some of the salient facts for earlier diagnosis on the part of the profession as well as the laity because the amelioration or eradication of this scourge never can be accomplished as far as the individual or the community is concerned until we teach the people at large the danger signs, and the profession exercise greater care in observing the scientific early symptoms.

The word cancer, coming from the Latin, meaning "Crab," amongst the laity, means a malignant growth. Amongst the profession it means a malignant growth that may originate from epi- or hypoblastic tissue making the carcinomata; or from mesoblastic tissue giving the sarcomata and endotheliomata, etc.

ETIOLOGY.

The true etiological factor is as yet not known. No doubt this next decade of investigation will lead to the discovery of the causative factor. Coley, of New York, from his massive experience with the sarcomata believes in the causes being a living organism.

In two recent cases of mine, there were distinct histories of local injuries at the site of cancers—one a large round cell sarcoma of the neck, and the other a carcinoma of liver.

We do know that we get cancers where there appears a pre-disposing cause, as injury or over-use, etc., in a region of the body where we had embryonal cells, or cell inclusions, or in apparent normal tissue. In microscopic sections the cancer cells have reverted to the embryonic types with larger cell bodies and nuclei, and mitoses, suggesting from the way they invade normal organic territory along the blood and lymph channels, and by continuity, that they have taken on a wild or insane growth, severing all connections with a central trophic nerve control. This we attribute to a local condition, to auto-intoxication, or to some form of bacteria or parasite.

Dr. Carr, the president of the Washington Surgical Society, claims: that our modern method of living, first: lack of fresh air; second: fear and worry; and third: too little muscular exercise and too much brain cell fatigue, makes civilized people more susceptible to cancer; but the savage, amongst whom cancer is not known to any extent, do not suffer from any of these defects.

DISTRIBUTION.

Cancer is known the civilized world over, and in a proportion increasing to such an extent that when it occurs breathes horror and mutilation and death in a degree to be feared more than pulmonary tuberculosis.

Its mortality records have been increasing on account of first, clearer diagnosis, and second, apparent increasing frequency, and in some localities passing that of tuberculosis. (Peterson). It appears, as said before, that amongst uncivilized people malignant growths are not known, and increases with the advance of civilization. (Carr).

EDUCATIONAL ACTIVITIES.

A world wide campaign against the scourge would occur today, as the anti-tuberculosis campaign, but the absence of the knowledge of its absolute cause does not give us the fundamental basis. But, when the etiology has been worked out, there will arise such a campaign, a rival of that one of today.

In Germany, the state has taken up the question, and by pamphlets and news articles is spreading knowledge about cancer in order that the public will seek early advice from physicians, because they realize that in the pre-cancerous or early cancerous stage of this multiple disease it is amenable to *thorough* surgical care with the highest percentage of cures. In nearly all the other countries of Europe commissions and associations have been or-

* Read before the Houghton County Medical Society Nov. 3, 1913.

ganized to carry on work along these same lines.

When we think back but one year of our carcinomata of the breast, uterus, stomach, and liver, and sarcomata of bones and mesoblastic tissue, etc., we cannot emphasize too strongly the need of such work and we can heartily endorse the sentiment. It is imperative on us as citizens and medical men to strive to our utmost to reduce the mortality.

In the United States the cancer question has resulted in a national society for the relief and prevention of cancer, and many of the national, (American Medical Association and American Gynecological Association) and smaller county and state societies have committees appointed to look into the importance of methods of early diagnosis of cancer. November 13th, 1913, in Chicago, was another banner day for this question.

At the last meeting of the American Gynecological Society in New York, this subject was much discussed by our most earnest and best surgeons. They were nearly all in accord upon enlightening women through the latter's clubs and magazines upon the danger of permitting tumors of the breast to remain until pain arises, and fibroids and other tumors of the pelvis to lie as benign growths; to permit examination of pelvic organs when it was thought necessary to disprove malignancy; and to not neglect investigation at any irregularity at all during the menopause, metrorrhagia, menorrhagia, etc.

William Mayo, before the American Medical Association in 1913, emphasized, what we all know and believe, that even carcinoma of stomach is curable if recognized early enough. Therefore, make the stomach tube as important and frequent an instrument of diagnosis as the stethoscope, for then we can recognize, by chemical analysis of stomach contents, the absence of hydrochloric acid with or without presence of blood, etc. When "tissue-bits" are found in stomach contents, it is very likely too late for any treatment. Occult blood in stool is a very important corroborative evidence.

In April, of this year, I saw a man of fifty-four years who lost twenty-five pounds in weight; had loss in appetite; with one attack of pain in stomach region, relieved by lavage. There was no tenderness, and absolutely no palpable sign of mass in epigastrium, or any enlarged glands. His stomach contents contained no free hydrochloric acid on repeated examinations; the motility was good with no retention, but there was a trace of occult blood in his stool. (Weber). On account of age, loss in weight, and stomach and intestinal findings, I made a diagnosis of probable carcinoma

of stomach and advised exploration. Dr. Billings, of Chicago, corroborated my findings. On exploration the growth was inoperable, but gastro-enterostomy was done giving excellent results. This is one more plea for teaching the laity to understand the need of earlier advice by physicians.

STATISTICS.

In a pamphlet issued by the "Society for Prevention and Relief of Cancer" from London June, 1913, we find many points of interest. They say cancer is increasing, and that one in every seven women and one in every eleven men die of this disease. In England and Wales, from 1851 to 1860 the average death from cancer equalled 6,020; from 1881 to 1890 the average death equalled 16,192; from 1900 to 1910 the average death equalled 30,419; and in 1910 was 5.9 per cent of total death. In the United Kingdom, from 1880 to 1910, the cancer death rate just doubled itself. Fifty years ago, to one hundred deaths from tuberculosis there were sixteen cancer deaths; but now, to one hundred deaths from tuberculosis there are ninety-six cancer deaths.

In this same report, Sir Jonathin Hutchinson claims that on account of improved hygienic conditions people are permitted to live through infectious disease periods, allowing more to die after thirty-five years of age which is the cancer period.

In Michigan, in 1909, cancer of stomach and liver predominated, being three to four times that of female genitals, with the latter next, but the sum of the cancers of the stomach, liver and intestines is one and one-fifth times that of all other cancers combined. The death rate per 100,000 in 1911 was 72.3 and increased to 74.4 in 1912.

In 1899, W. H. Welch in an analysis of 30,000 cases of cancer, 21.4 per cent. were of stomach, next in frequency to uterus. Dr. C. Martin in Osler's Practice, in 1,000,000 hospital admissions showed 4,700 gastric cancers or 47 per cent. and in combined autopsy statistics of over 50,000 cases there were 2,000 gastric cancers or 4 per cent. In Hamburg, from 1872 to 1895, their collection showed 50.2 per cent. of all cancers as gastric and combined with that of intestines from 75 to 85 per cent. of all cancers. Another series of 70,000 cancers show 33 per cent. gastric.

MICHIGAN STATISTICS.

I have collected and placed on charts tabulated rates of death covering United States registration area, Michigan, and our own county, based upon the mortality statistics of the Bureau at Washington. In the United States as the registration area increased 66 per cent. in population, pulmonary tuberculosis and

pneumonia increased but 25 per cent., cancer doubled in ten years from 1900 to 1909 inclusive.

In Michigan during the same period we had 1 per cent. increase in population and per 100,000 population a 10 per cent. decrease in pulmonary tuberculosis, 33 per cent. decrease

nary tuberculosis increased 54.2 per cent. and pneumonia decreased 52.2 per cent. In fourteen counties of the state cancer equals or exceeds pulmonary tuberculosis. In Ann Arbor, probably on account of the University Hospital, in 1900 cancer and pulmonary tuberculosis were equal, 151.6 per 100,000; but in 1909

CHART NO. I.

| | U. S. Regs. Area. | | | Michigan | | | Houghton Co. | | |
|----------------------|-------------------|-------------|------------|-----------|------------|-----------|--------------|------------|---------|
| | 1900 | 1900 to '09 | 1909 | 1900 | '00 to '09 | 1909 | 1900 | '00 to '09 | 1909 |
| Total Popul'n . | 30,765,618 | 37,692,567 | 50,870,578 | 2,420,982 | 2,520,016 | 2,772,421 | 66,063 | 74,094 | 85,742 |
| Tot. Deaths .. | 539,939 | 598,734 | 732,538 | 33,973 | 34,023 | 36,260 | 965 | 1,008 | 965 |
| Tot. 35 yrs. plus | | 313,227 | | | | 18,016 | 50.4% | | 56.7% |
| Tot. pr 100,000 | 1,760 | 1,580 | 1,440 | 1,400 | 1,340 | 1,310 | 1,460.7 | | 1,125.5 |
| Total deaths: | | | | | | | | | |
| Cancer | 19,381 | | 37,562 | 1,472 | | 1,952 | 31 | | 34 |
| Per 100,000 . | 62.9 | | 73.8 | 61.2 | | 70.4 | 46.9 | | 40 |
| Ave. age—59 years | | | | | | | | | |
| Pulm. Tbc. .. | 55,504 | | 70,040 | 2,184 | | 2,237 | 59 | | 91 |
| Per 100,000 . | 180.8 | | 137.7 | 90.2 | | 80.7 | 89.4 | | 107 |
| Ave age—36.1 years. | | | | | | | | | |
| Pneumonia . | 55,513 | | 70,030 | 2,247 | | 1,733 | 69 | | 33 |
| Per 100,000 . | 1,808 | | 137.7 | 92.8 | | 62.5 | 104.6 | | 30.8 |
| Ave. age—37.4 years. | | | | | | | | | |

In Michigan, per 100,000—Cancer, 1911, 72.3; 1912, 74.3.

| | U. S. Registration Area. | | Michigan. | |
|---------------------------------|--------------------------|------|-----------|------|
| | 1900 | 1909 | 1900 | 1909 |
| Deaths from Cancer per 100,000: | | | | |
| 1. Stomach and Liver | 22.5 | 29.5 | 24.9 | 29.5 |
| 2. Intestines | 5.7 | 9.3 | 6.4 | 7.9 |
| 3. Female Genitals | 8.8 | 11.2 | 9.8 | 10.1 |
| 4. Mouth | 1.6 | 2.8 | 1.9 | 3.0 |
| 5. Skin | 2.0 | 2.9 | 2.6 | 3.0 |
| 6. Breast | 4.7 | 7.0 | 5.7 | 6.6 |
| 7. Other Cancers | 17.8 | 11.3 | 12.9 | 10.9 |

U. S. Bureau of Census.

CHART NO. II.

| | 1900 | '01 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| Cancer: | | | | | | | | | | |
| U. S. Regr. Area | 63 | 64.3 | 65.5 | 68.3 | 70.2 | 71.4 | 68.1 | 70.9 | 70.8 | 73.8 |
| Michigan | 61.2 | 60 | 59.6 | 67.5 | 67.4 | 63.6 | 66.5 | 65 | 70.6 | 70.4 |
| Houghton County | 48.4 | 44.6 | 64.4 | 46.1 | 62.3 | 56.9 | 32.5 | 32.6 | 48.5 | 39.7 |
| Pulmonary Tuberculosis: | | | | | | | | | | |
| U. S. Regr. Area | 180.5 | 174.5 | 162.6 | 164.9 | 176.2 | 166.7 | 155.6 | 154.3 | 144 | 137.7 |
| Michigan | 90.2 | 88.4 | 84.1 | 85.3 | 91.3 | 87.6 | 88.6 | 86.5 | 82.3 | 80.7 |
| Houghton County | 90.8 | 92.3 | 92.2 | 102.2 | 109 | 109.7 | 139.3 | 85.2 | 91.8 | 106.1 |
| Pneumonia: | | | | | | | | | | |
| U. S. Regr. Area | 180.5 | 161.3 | 155.7 | 155.1 | 171.5 | 148.5 | 145.5 | 156.5 | 30.9 | 137.7 |
| Michigan | 92.8 | 99.1 | 85.9 | 80.1 | 80 | 71.8 | 72.8 | 81.8 | 64 | 62.5 |
| Houghton County | 104.5 | 81.8 | 93.7 | 89.2 | 94.9 | 81.2 | 92.4 | 60.2 | 59.2 | 38.5 |

Death Rate per 100,000, U. S. Bureau of Census.

in pneumonia and about 13 per cent increase in cancer.

HOUGHTON COUNTY.

Houghton County clerk's records show that during 1900 to 1909 inclusive, 28.2 per cent. increase in population with no increase in death rate; but cancer increased 9.7 per cent., pulmo-

cancer mortality equaled 284 to 101.4 for pulmonary tuberculosis.

An interesting fact appears in the U. S. registration area. Physicians and surgeons in 1909 had a mortality rate per 100,000 from pulmonary tuberculosis, 6.6, cancer 6.7, pneumonia 7.4.

THE PHYSICIAN'S DUTY.

At this point it is well to ask a question: What is our duty with this knowledge of cancer? First, educate the public, and second improve the methods of the practitioner.

I. Under educate the public we teach that:

1st—The cancer age or the age of greatest susceptibility is at thirty-five years and onward, 55 to 60 years being the average. Cancers do appear at an earlier age also. Any of the facts enumerated in number four of this division appearing at this period should be thoroughly investigated by a physician to ascertain if there is a chance of malignancy. Menopause always holds for the woman a period of danger, during which she should report any irregularity.

2nd—The stomach, female genitals, breast, liver, intestines, are the locations of greatest danger in the order named.

3rd—History of cancer in family, is important, and Osler says occurs in about 10 per cent. of cases.

4th—Teach the masses the danger of indurations, masses, and fissures; that fibroids should not be considered benign, on account of the possibility of malignant changes arising; the importance and significance of hemorrhages from stomach, or bowels or bladder; metrorrhagia and menorrhagia at menopause; of the significance of loss in weight at the cancer period; the need of thorough investigation of "dyspepsia" after thirty-five years.

5th—Teach the masses that the earlier you get at a cancer the larger percentage they have in their favor. Now with the most careful surgery, serum, and vaccine, and combined rays-treatment our cures are but 20 per cent. at the outside. During a short period I had under my care five cancers with the following results: (a) Giant cell sarcoma of last phalange with amputation of third finger; (b) carcinoma of the stomach with a gastro-enterostomy—only relief; (c) Carcinoma of the liver—died; (d) Large round cell alv. sarcoma of the neck—died; and (e) Carcinoma of the uterus, dying.

6th—Give a publicity committee of the United States, State, and County societies authority and power to publish facts concerning cancer and the early signs of cancer of the stomach, breasts, uterus, and intestines, etc., sending these to physicians and nurses. Also to bring these facts as above stated properly before woman's clubs, and woman's magazines, emphasizing that they must not wait for the growth of benign tumors or pain or tenderness to signify attention. We are fully aware of the fact that tenderness and growth of melanotic moles mean probable liver metastases; that pain in a breast tumor means metastases, and recurrences. The same can be said of indolent

ulcers of the skin, and tumors of the pelvis. The degree of malignancy may be measured by a microscopic pathological specimen to some extent, but unfortunately the time of same is beyond us.

7th—Beware of the danger of so-called cancer cures—I. E. from St. Louis, and Odin's of Paris.

8th—Do not massage tumors.

9th—Decrease worry and encourage more fresh air living.

II. To improve the physicians' results we must observe the facts as stated above and in addition:

1st—Accurately registering in scientific english cancer cases and deaths. I found while consulting the mortality records of the County Clerk that many languages are used excepting scientific english, and I must also say that unscientific and misleading causes of death are reported.

2nd—Send from a central source to every physician in the state articles emphasizing the points brought up in previous paragraphs. (I.—first subdivision of the first division).

3rd—Establish in our universities special courses for under graduates, nurses, and post graduates, and possibly other students, to give them the methods and technic, and need of early diagnosis of cancer.

4th—We should have a state laboratory or access to free examination for pathological specimens.

5th—Remove benign or malignant tumors for excision or pathological examination, thoroughly, in such a way as not to contaminate edges of wound by cancer tissue.

6th—It is obligatory to our scientific sense to disprove in negative cases as well as to have proof in positive cases, the absence of malignancy.

8th—Do not delay.

FRACTURES FROM THE MEDICO-LEGAL STANDPOINT*

FRANK BURR TIBBALS, M.D.
DETROIT, MICH.

CHAIRMAN OF THE MEDICO-LEGAL COMMITTEE
MICH. STATE MEDICAL SOCIETY.

About 40 per cent. of the cases reported to The Medico-Legal Committee of The Michigan State Medical Society are fracture cases, and I feel sure that the ratio is not diminished in other states. So far as my information goes nearly every malpractice case within recent years in this state in which settlement has been made or final judgment paid has been a fracture case. This must be accepted as proving

* Read before the Lapeer County Medical Society, Oct. 14, 1913, and before the Wayne County Medical Society Nov. 17, 1913.

the dissatisfaction of the laity with the functional or anatomical results of the present treatment of fractures. It is very evident that more is expected of us than we are giving and the inquiry is pertinent, wherein are we at fault, if we are at fault? Most fractures are reduced and treated by the general practitioner often without consultation with any colleague more experienced than himself. The anatomical training necessary to admission to practice is adjudged sufficient to fit every physician for the treatment of injuries to the body structure and doubtless is. Nevertheless, some men possess special mechanical skill and experience and are valued consultants especially for convincing the patient that the treatment is the best possible under the circumstances.

Four things are necessary for the successful treatment of fractures: 1. An exact diagnosis. 2. The best possible replacement of the bone. 3. Maintenance of the fractured bones in correct anatomical position. 4. Osteogenetic action sufficient to produce firm union. Exact diagnosis is impossible in some fractures without a radiograph, therefore a properly taken and interpreted radiograph before and after reduction is of great assistance in outlining the best plan to be followed by treatment. Note that I say a properly taken and interpreted radiograph. It is perhaps unfortunate but nevertheless true, that the equipment and training essential to meet this requirement belong to but a few men in the large cities; therefore the field of usefulness of the X-ray is limited to those ambulant cases which can travel to the good machine and the good operator. The position of radiographers who state openly and even testify in court that a radiograph is a "*Sine Qua Non*" in treating fractures is both unwise and untrue, for it assumes that the X-ray is the *only method* of diagnosis and that its use assures a good functional and anatomical result. Admitting the value of the radiograph, properly taken and interpreted, it has a limited function in treatment because it so often but discloses conditions not amenable to treatment.

In many or most fractures of the long bones we cannot put and maintain the fragments in perfect anatomical juxtaposition, on account of the pull of the muscles, without converting a simple into a compound fracture and wiring or plating the bones. This procedure, though ideal, can never become a legal requirement because it should never be undertaken except by the surgeon who has acquired a perfect *instrumental* technic and in a good hospital, a manifest impossibility in the majority of fractures for the reason that except in cities or large industrial centers neither the skilled operator nor the good hospital are to be found. The law holds each physician responsible for the

"Average degree of knowledge and skill of the medical community in which he lives." Hence the country practitioner will satisfy the legal requirements without bone plating or radiographs, unless the prevailing custom of his community is to use these adjuncts.

It may be that the Courts will ultimately decide the radiograph to be so valuable an adjunct that a doctor is negligent who has not used it and the wise man will place the burden for failure upon the refusal of the patient to carry out his suggestion rather than upon his neglect to advise a radiograph. In a recent case in New York a large verdict was given in the lower court, principally because a radiograph was not taken in a fractured femur. This case is being appealed so that this ruling is not final. A somewhat similar case was lost in our state because a radiographer testified that he considered it negligence not to have a radiograph in every fracture, although the patient in question lived sixteen miles in the country. If such views are held by radiographers they should be reserved for medical meetings and then given purely as a matter of opinion. Such opinions are biased by the fact that the sponsor therefor makes his living by taking radiographs and can have little conception of the difficulties of treating fractures after he has done his little part. They are unfair because they assume an admitted diagnostic aid to be essential to treatment. They are unwise because such opinions, frequently and publicly repeated, may persuade the Courts that what is a half truth under some circumstances is an invariable fact, and an incalculable injury be done to the profession, already too open to attack.

Fracture cases are hard to defend because apparent deformity with real or assumed disability presents ocular evidence, from which the assumption of negligence or incompetence is easily drawn. Any fracture case which reaches a jury is rather certain to result in a verdict against the doctor. In analyzing the reason for this failure of justice it seems due to ignorance as to what really takes place in the repair of a broken bone and the role of the physician in connection therewith. We can diagnose the fact of a fracture, we can and should know the location and type of fracture, whether simple or comminuted, straight or spiral, transverse or oblique and can generally ascertain it by the usual methods of examination with or without the aid of an anaesthetic or a radiograph. A radiograph is of great assistance in corroborating our clinical findings and in demonstrating to the patient the condition present and our understanding thereof. An anaesthetic is frequently valuable in the reduction of a fracture, rendering the necessary manipulation painless and enabling the surgeon

to restore the former anatomical relations as nearly as possible. It is then necessary to maintain the fragments in this position during the process of repair. Splints must be long enough to immobilize both ends of the broken bone and neither too loose nor too tight, and must be fitted to the contour of the part and refitted to the comfort of the patient.

If we have done this, skillfully and intelligently, we have done all that the law requires and all that it is possible to do, and are not responsible or blamable for untoward results. We cannot always be sure that muscle, fascia or blood-clot do not intervene between the ends of the bone to prevent union or that sufficient osteogenetic power is there to give firm union. We can in no way (except by immobilization) regulate the amount of callus thrown out, an excess of which may cause deformity or impair function. In fractures of the clavicle, scapula, sternum and pelvis absolute immobilization is impossible and some overlapping or deformity is the unavoidable rule. In fractures of the long bones it is frequently impossible to put and keep the fragments in even approximate position, the pull of the attached muscles preventing. In such cases we will have a bad anatomical result but not necessarily a bad functional result. In fractures involving joints we must expect some loss of function. This in the elbow may seriously impair flexion and extension because excess callus or a displaced fragment are in the way. Take a T fracture through the condyles and no method will keep the fragments in position but wiring or nailing. In a fracture of the surgical or anatomical neck of the humerus or an intracapsular fracture of the femur, we have no control over the upper fragment and must expect impaired function unless we operate. But to operate unless under proper conditions therefor substitutes the hazard of loss of limb or even life for that of loss of function.

The statement is often made by advocates of the Lane plate or other operative treatment that the results of conservative treatment are so bad as to justify operation on every case where a perfect anatomical reduction cannot be had and maintained. Is this true? In my opinion these advocates do not distinguish between cosmetic deformity and loss of function. Excluding joint fractures and those high in the shaft of the femur our results are uniformly good, functionally, and it is yet to be proven that the average results are better with operative treatment. It is admitted that the results *look* better but many a doctor who has seen the pulling and hauling necessary to reduce and plate a femur would take his chance with Bucks' extension. His resultant shortening might necessitate a high shoe, but he has his leg and his life with no vanadium steel plate

to cause future trouble. The bone work of Murphy and others offers hope for the future that the impaired function of joint fractures may be overcome by resection or nailing of the fragments with retention of workable joints. But such work is not for the general practitioner and should be reserved until it is known that nature plus the surgeon have failed, in the individual case, to obtain a useful joint. Conservatism is not negligence and the freedom from hazard justifies the trial of simpler means first. Because a hysterectomy cures a fibroid, whether the patient lives or dies does not justify the operative removal of simple non symptom producing fibroids. Neither does the fact that *some* operations for fractures are very successful, in *some* hands, justify submitting all fractures where perfect anatomical position cannot be maintained to operation.

What should be the course of the man called upon to treat a fracture? He should be certain that a fracture exists and know what it involves. In this exact diagnosis a properly taken and interpreted radiograph is of great assistance. If a good coil and operator are not available at least place upon the patient the blame for not having this aid. Call to your assistance the best man in your vicinity that you may have his corroboration that the position and treatment is the best possible in the individual case. See the case often enough to know that the retentive apparatus holds the fracture with comfort to the patient and without obstruction to the circulation. Take the patient into your confidence enough that he may understand the problem you have to deal with and demonstrate by the radiograph, if you have one. Tell him that he will have impaired function and some deformity, if you think he will, even if you exaggerate the condition beyond what you expect to get. It is better to give him a better result than he expects, better for both physician and patient. If he is satisfied with the result it makes less difference if you are not. If he was told at the start to expect certain things and you have witnesses to that effect he will not blame you for what he understands to be unavoidable. But if he sees a bend or a lump or has an impairment of motion when he expected a perfect result he has ocular evidence to convince most juries that you did not properly set the fracture and may attempt to do so because he does not know that this special fracture could not be kept in place. You are legally to blame if you do not make a diagnosis unless you can show that you used all means for so doing which other men in your community use. You are negligent if you do not use proper splints or retention apparatus or bandage too tight or too loose, but if you can show that you used ordinary care and skill you should not be held

responsible for results. A friendly consultant will aid you greatly in proving this. Within the past few years there have been several verdicts against physicians in this state in fracture cases. In one settlement was finally made, after several trials, where the allegation was, that a plaster cast was applied tight enough to obstruct and the foot was lost thereby. In another the Supreme Court decided that the doctor had not used ordinary knowledge in striving to diagnose an impacted fracture of the femur, for he had made no measurements or applied other expert means of detecting the condition with which the law assumed him to be familiar. This case was doubtless a Charcot joint, where the absence of pain led the doctor to rule out fracture without making a careful examination. In another, a large adverse verdict was given in an elbow case where all medical evidence was in the doctor's favor but the apparently perjured testimony of the family carried the case to the jury. In this case pressure on the nerve by a displaced fragment led to an operation by another surgeon and the family claimed to have repeatedly called attention to this fragment as out of place. In another, a large verdict was given against a country doctor through the testimony of a radiographer that failure to have a radiograph constituted negligence, although the patient lived sixteen miles from a coil. In two cases suit has been brought where a doctor made a first dressing, never seeing the case afterwards, the first doctor being supposed to guarantee that reduction, made as a temporary measure, would give a perfect result in spite of negligent or incompetent after care.

An occasional physician is short sighted enough to criticise the work of a colleague with no knowledge of the difficulties encountered in the special case. This but touches the spark to the fuse and a malpractice suit follows. In fact, some professional support underlies nearly every such suit. If the profession would stand together, man to man, to fight this menace, few fracture cases would reach trial, for professional testimony is necessary to prove incompetence or negligence. Unless we can educate both the profession and the laity to regard some deformity and some disability in some fractures as inevitable we will have to come to the point where we refuse attendance upon such cases unless absolved from responsibility or blame for untoward results. Education of the patient seems the most feasible. If he understands the condition and the difficulties, knows that you understand them, knows that he must expect some deformity or loss of function and that nature rather than you is responsible for what cannot be helped, he will be proud that so competent a physician has given him the good result which he has. For the occasional blackmailing patient, who will suppress his

gratitude for the hope of filthy lucre, there is no redress except to stand together and never aid, by private criticism or public testimony, such unjust assaults upon the profession. Realizing the risk in treating fractures we must be ever watchful that we have not "Left undone those things we ought to have done nor done those things we ought not to have done" and be ready to prove it, both ways. With a careful diagnosis, a consultant for corroboration, skillful and non-negligent treatment, a satisfied patient by reason of understanding his own case, and a profession above making capital at the expense of each other, suit for fractures can be made very nearly a relic of the dark ages of medicine.

EDITORIAL NOTES OF UTMOST IMPORTANCE.

For your own benefit and protection, *please remember these facts:*

The large majority of suits for damages for alleged malpractice which we are called upon to defend, are based upon an alleged improper treatment of a fracture.

In every case of fracture that comes to you for professional treatment, see that an X-Ray plate is made and that you keep it in your possession; do not give it to the patient.

Whenever possible, have some other physician see the patient with you, make a careful examination of the fracture, and be able to testify that it was properly set and bandaged.

Use the fluoroscope if you like, but in addition be sure to have a plate made; it will remain a permanent record of the condition at the time it was taken.

In two instances where suits were brought, the member had thoughtlessly given the X-ray plates to the patient and of course the patient would not produce them; they were "lost."

In 1896, Dr. Jones gave a demonstration of the then very new X or Roentgen rays before the San Francisco County Medical Society. In the course of his remarks he expressed the opinion that the time would come when any physician who treated a fracture case without making an X-ray examination of it, would render himself liable to a suit for damages. Many of those present ridiculed this opinion and one went so far as to deplore the discovery of the X-rays, saying that they would make surgeons less careful and less skilful. Carelessness in this regard—not taking and keeping an X-ray plate—has cost the Society \$4,000 in the defense of suits which came about more or less as predicted.

To put it graphically, this carelessness has cost each individual member almost \$2, for the money for defense comes out of our pockets; the more the work costs the Society, the higher is the required assessment.

Have an X-ray plate made in every case of fracture.

Keep the plate—don't give it to the patient.

Have a consultant if possible.

These things are for your own protection and a little care and thought may keep you from a great deal of trouble and loss of time and annoyance in the future.

Also, see that your dues are paid promptly before March 1st.

—California State Medical Journal.

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, December 3, 1913

The President, R. BISHOP CANFIELD, M.D., in the Chair

Reported by REUBEN PETERSON, M.D., Secretary

Reading of Papers

FAMILY SUSCEPTIBILITY TO CANCER

ALDRED SCOTT WARTHIN, Ph.D., M.D.

(Professor of Pathology and Director of the Pathological Laboratories in the University of Michigan, Ann Arbor.)

It has long been recognized that a family susceptibility to certain forms of benign neoplasms exists. Many of the peculiar "family marks" or "birthmarks" distinguishing the members of certain family lines are neoplasms usually of a mature connective-tissue variety, chiefly hemangiomas, lymphangiomas or fibromas (moles, warts, nevi, "strawberry mark," "raspberry mark," etc.). Lipomas, chondromas, osteomas, neurofibromas, gliomas, leiomyofibromas, papillomas, adeomas and cyst-adenomas have been observed to "run" in certain families, and most authorities agree as to the existence of a family susceptibility in the case of these neoplasms. Certain varieties of carcinoma and sarcoma are also regarded by various writers as showing a less marked family tendency.

As to a general susceptibility to cancer appearing as a definite family characteristic, authorities at the present time are divided. Its existence is denied by some, and as strongly affirmed by others, but as a matter of fact there are very few good statistical studies of the family occurrence of carcinoma. Cancer surveys have yielded little of value because of the great difficulty in obtaining immediate knowledge of members of a given family for more than one or two generations. It is a well known fact that few hospital patients can give any definite information as to the cause of death of their grandparents, and the same thing is true of the population at large. It is only in rare instances that a complete family history extending over several generations can be obtained. Further, when such rare complete family histories covering a number of generations can be obtained, it must be borne in mind that the diag-

nosis of cancer a generation or two ago was almost wholly a clinical one, unsupported by microscopic examination; and that the common clinical diagnosis of "tumor" covers a very large and heterogeneous class of conditions, the majority bearing no relationship to carcinoma. It is obvious that such a diagnosis has no statistical value; but, as a matter of fact, many of our so-called "cancer statistics" are based upon just such loose clinical statements. This is, however, no argument for rejecting all of the diagnoses of cancer that have been made without the corroboration of the microscopic examination. Particularly in the case of lip, stomach, breast and uterine cancers may clinical diagnoses or family traditions be relied upon with a high degree of certainty. The outward appearances of breast and lip cancers, the striking symptoms of gastric and uterine cancers, in connection with a malignant course and fatal termination offer very fairly reliable criteria for both a clinical diagnosis and family tradition of cancer of these organs; and the percentage of error is probably not very great in so far as these conditions are concerned. In the case of other diagnoses of "abdominal cancer" or "tumor," "cancer of the liver," etc., the precise nature of the affection is very doubtful.

Throughout the literature, particularly that relating to cancer of the breast, there are recorded instances of the multiple family occurrences of cancer. Few of these consider more than the members of the same or of two generations, and usually the affected members alone are taken into account. Such statistics give little information beyond the fact of the multiple occurrence of cancer in certain family groups or generations. Of recorded observations of the multiple occurrence of cancer in one family for several generations the one of Broca (*Traité des Tumeurs*, 1866, p. 151) is the most important. In brief, this family showed cancer in sixteen out of thirty-seven

members, as follows: Madame Z, died at the age of sixty of cancer of the breast. She left four daughters (A, B, C, D) who died of cancer of the liver (2) and cancer of the breast (2) at the ages of 62, 43, 51 and 54 respectively. Madame A had three unmarried daughters, alive and well at ages of 68, 72 and 78 years. Madame B had five daughters and two sons. First son died, without issue, at 54, of cancer of the stomach. First daughter died at 35 of cancer of breast; second at 35-45 of cancer of breast; third, at same age, of cancer of breast; fourth, at same age, of cancer of liver; while the fifth died at 60, non-cancerous. All of the children of Madame B were without issue. Madame C had five daughters and two sons. The first son died in the army without issue; the second son was alive and well at the age of 72. He had one son dying at 18, and one daughter alive and well at 24. The first daughter of Madame C died at 37 of cancer of the breast, leaving two sons and three daughters. The first of these was alive and well at 58, having three healthy sons; a second son died young without issue; first daughter died in child-bed at 28; second daughter died at 49 of cancer of the breast, bearing two healthy daughters; the third daughter died of consumption at 41. Madame C's second daughter died at 40 of cancer of the breast, leaving one healthy son; her third daughter died unmarried, at 47, of cancer of the uterus; the fourth daughter died, at 55, of cancer of the breast, leaving two sons alive and healthy; while her fifth daughter died unmarried at 61, of cancer of the liver. Madame D had an only son alive and well at the age of 70.

Williams (Natural History of Cancer, 1908) has collected from the literature many examples of the multiple occurrence of cancer in families and family groups, and also added valuable observations of his own. In 370 female cancer patients he found a history of heredity in 83 or 22.4 per cent.; in 136 cases of mammary cancer there was a family history in 24.2 per cent., and in 142 cases of uterine cancer a history of heredity in 19.7 per cent. Such percentages, as Williams points out, are very high from whatever point of view they may be regarded. Butlin finds a family history of cancer in 37 per cent. of cases of mammary cancer. Nunn estimates such a family history in breast cancer as 29.3 per cent., and Lemp at 23 per cent., all of these estimates agreeing fairly closely. In certain families, as in Broca's case, the cancer chances are greatly increased, fifteen to twenty times that of individuals of the general population. If the chances of cancer for the individuals of certain families are fifteen to twenty times greater than for the individual of the general population, we must concede the existence of a family tendency

to cancer, since such high percentages of occurrence in certain family lines cannot be explained on the grounds of environment, infection, or mere coincidence. Particularly is an assumption of a family tendency justified when the cancer affects the same organ or tissue of one sex through a number of generations, as in the case of Warren, the patient, patient's father, grandfather and great-grandfather all dying of cancer of the penis; and another instance reported by Earle of a patient with epithelioma of the scrotum, whose brother, father and grandfather all died of the same condition.

Williams from his own experience and collected cases, therefore, regards the statistical evidence in favor of family susceptibility to cancer as very strong. He states that inherited cancer manifests itself much more frequently in the female, although as often derived from the paternal as from the maternal side of the house. In cases of multiple family cancer there is an especial tendency for the females to be affected. He notes also the atavistic and collateral inheritance of the susceptibility to cancer, and the frequent association of tuberculosis, arthritic manifestations, and excessive fecundity. He believes that the majority of cancer patients are the *surviving members of tuberculous families*; hence advances the proposition that no inheritable condition is more favorable to the development of cancer than that which gives proclivity to cancer. Nevertheless he abstains from interpreting his collected facts in Mendelian terms, although he believes that the time will soon come when it will be advantageous to study the whole question from a Mendelian standpoint. He regards the great prophylactic question to be: "How in breeding to render a dominant tendency to cancer recessive."

Levin (*Zeitschrift für Krebsforschung*, 1912) is the first to make a eugenical study of the influence of heredity on cancer from the Mendelian standpoint. With the assistance of the Eugenic Record office at Cold Spring Harbor, Long Island, he has collected data from five families, two being fairly complete, the other three as yet fragmentary. These families are studied from the broad standpoint of the entire family line for six generations, and then by family groups in which one or more members suffer from cancer. The analysis of the family line as a whole shows that the incidence of cancer is not greater numerically than that of the general population. One thing is brought out in this study that does, however, speak for an influence of heredity upon cancer, and that is the occurrence in certain generations of cancer groups with a cancerous ancestor on either paternal or maternal side, or on both. The percentage of cancerous members in each cancerous fraternity corresponds closely to the

Mendelian percentage of members with recessive unit-characters in a hybrid generation, running in the eight cancerous fraternities analyzed from 10-33 per cent. of cancerous members to non-cancerous (Mendelian ratio 25 per cent.). Levin concludes that resistance to cancer is therefore a dominant unit-character, the absence of which creates a susceptibility to cancer. He also notes that the family susceptibility is specific for certain organs, in one family the uterus, in another the breast are the organs particularly involved. This had already been shown by Williams, who also emphasized the fact that in the males of the affected family the gastro-intestinal tract is usually the seat of the cancer, while in the female members the breast or uterus is affected.

A great increase of interest has recently been awakened in the subject of heredity in cancer by numerous observations upon the occurrence of cancer in certain strains of white mice and rats. It has been noted by a number of workers in this line that a greater proportion of spontaneous cancers occurred in mice purchased from certain dealers. While this fact was at first used as an argument for the infective nature of mouse cancer it was shown later that in the case of a strain of mice showing a high percentage of spontaneous cancers a much greater proportion of successful transplantations of the cancer could be obtained than in the case of strains showing few or no spontaneous tumors. According to Leo Loeb the incidence of successful transplantations in some strains showing a high occurrence of spontaneous cancer is practically 100 per cent. In Well's laboratory, breeding experiments with such susceptible strains of mice are being carried out on a large scale, and the facts so far observed speak for the existence of an inherited cancer susceptibility. Although denied by Bashford the occurrence of such a familial tendency to carcinoma in mice is generally accepted at the present time, because of the following observed facts: *Certain strains of mice do not develop spontaneous carcinoma, and such strains are resistant to transplantation of carcinomas from other mice; on the other hand, other family strains of mice show a high frequency of spontaneous carcinoma, and such strains give a high percentage of "takes" to transplantations.* Tyzzer has carried out breeding experiments with such strains but was unable to find that such a cancer susceptibility was transmitted according to Mendelian principles. Levin and Sittenfield (Proceedings of the New York Pathological Society, Oct., 1910) concluded from their investigations of the influence of heredity in cancer of the white rat that *resistance to the growth of an inoculable cancer in this animal behaves in the manner of a Mendelian dominant unit-character.* The observations of the part played by heredity in

mouse and rat cancer are still too limited for us to draw any final conclusions; but, with the breeding experiments now being carried on, on a large scale by a number of workers, the problem may soon be settled.

In the "*Archives of Internal Medicine*," November, 1913, I have published the results of a statistical investigation of the cases of carcinoma examined in my laboratory during the years 1895-1913, for the purpose of determining what influence heredity might have had in the etiology of these cases. During these years there were 3,600 cases of neoplasm examined in the Pathological Laboratory of the University for the purpose of diagnosis. Of these 3,600 neoplasms 1,600 were carcinomas; and it is with these 1,600 cases that the present investigation was concerned. The great majority, about 90 per cent., of the material came from the state of Michigan; and as the University Hospital is not a charity hospital, it represents very well the average population of the state. The usual difficulty of obtaining a complete family history of hospital patients exists here also, although a teaching hospital and with much greater care taken in this direction than would be carried out in the average city hospital. About 30 per cent. gave full histories with details of several generations; and it is in these detailed histories that evidence of a family tendency to cancer stands out. I have for several years been getting the impression that a family susceptibility to cancer was very striking in some families, and that in such families there was a tendency for the neoplasm to appear at an earlier age in the youngest generation, and to run a more malignant course. Whenever, then, we have had a case of carcinoma in a relatively young individual I have made an especial effort to obtain the family history. As a result our records show an increase in recent years of histories showing a multiple occurrence of cancer.

From the records of the carcinoma cases I have selected the most striking of the cases of multiple family occurrence of cancer. Four families stand out prominently because of the striking proclivity to cancer shown in three generations. Charts illustrating these families are given in the "*Archives of Internal Medicine*," but the abstract of the family histories is reproduced here.

Family G.—In this family a fairly complete survey was made of the two generations derived from a cancerous grandfather with a traditional history of cancer in his life and a grandmother with a normal family history. From these there were ten children, five males and five females. Two of the daughters died of cancer of the uterus at 55 and 40 years, while two sons died at 42 of cancer of the stomach, and a third one at 45 of cancer of the abdomen.

All five of these individuals were married to normal partners without a family history of cancer, and all had issue, as follows: Oldest daughter who died at 55 of cancer of the uterus, had ten children; one daughter operated on at 42 for "cancer" of the uterus and still living; another daughter operated on at 22 for uterine tumor and bilateral dermoids of ovary, and still living. The remaining eight children are all living and well, only two being over 40 years of age. The second daughter, who died at 40 of cancer of the uterus, had four children, two sons and two daughters, all dying of cancer, the two sons of cancer of the stomach and intestine, and the two daughters of carcinoma of the uterus. The third daughter, living and well at the age of 75, has three normal children living at the ages of 47, 50 and 55. Four children had no living issue. The eighth child, a son, died at 42 of cancer of the stomach. His wife was of normal family history. They had eight children, of whom two daughters have died of cancer of the uterus at 40 and 44 years, while the remaining six are all living and well below the age of 40. The ninth child, a son, died of cancer of the stomach when between 40 and 42 years of age. He left six children from a marriage contracted with a woman of non-cancerous family history. One daughter died at 42 of cancer of the uterus, three children died of tuberculosis between the ages of 18 and 25 years, while two others are living and well at the ages of 32 and 29 years. The tenth son died at 45 of cancer of the abdomen, most probably primary in the stomach. He left, from a marriage contracted with a woman of non-cancerous family, seven children, of whom one died at 42 of cancer of the stomach and liver, another at 47 of cancer of the intestine, while a third was operated on at 42 for tumor ("cancer") of the uterus and still lives in apparent good health. Four others are living and normal at the ages of 45, 35, 30 and thirty.

Of the forty-eight descendants of the cancerous grandfather seventeen have died or been operated on for "cancer." The preponderance of carcinoma of the uterus (ten cases) and of the stomach (seven cases) is very striking in the family history.

Family F.—In this family the paternal grandmother died of "tumor." Her non-cancerous brother had two children, both of whom died of "cancer." Her only son died at 61 of dropsy. He married a woman who had two brothers who died of cancer of the stomach. She herself died of Bright's disease at 75. Her mother died of heart disease. The three daughters of this pair who show a double family history of susceptibility to cancer all had neoplasms; the oldest was operated on for tumor ("cancer") of the uterus and is still living; the second was operated on at 51 for myosarcoma of

uterus, while the third daughter died of cystic tumor of the ovary. In this family history the preponderance of stomach and uterine neoplasms is also shown.

Family P.—The paternal grandfather had a nephew who died of cancer of the lip. In the first filial generation there was one daughter who died at 35 of cancer of the lip and a son who died at 86 of cancer of the scalp and cervical lymph-nodes. This son married a non-cancerous woman whose only sister had died at 47 of cancer of the rectum. From this union thirteen children, ten of whom (five brothers and five sisters) all died of pulmonary tuberculosis before the age of 30, while three remaining daughters had carcinoma of the breast, two dying at the ages of 36 and 42, and one operated on at thirty-five.

Family S.—The paternal great-grandfather died at about 70 of cancer of the stomach. His only son died at about 60 of cancer of the stomach, having married a woman who died at about 50 of cancer of the breast. They had six children, all of whom died of cancer; two daughters died at 80 and 60 of cancer of the breast, and another at 60 of multiple carcinoma of the breast, bladder and rectum. Two sons died of cancer of the stomach at the ages of 75 and 40, the third son dying of cancer of some internal organ, most probably the stomach. Only one son had issue, by marriage with a normal line. The only child died at 36 of cancer of the uterus. Of the eight descendants of the cancerous great-grandfather all died of cancer. As in Family P., the occurrence of carcinoma in both paternal and maternal lines apparently strengthens the susceptibility, both families becoming extinct.

A larger number of cases showing a family history of multiple occurrence of cancer through two or three generations are to be found in our records. Twenty-nine of these were selected as representative. Since the family histories are more or less incompletely given I have classed these histories under the head of "cancerous fraternities" or "cancer-generations." In general the normal members of the second and third generations are given, so that the proportion of cancerous to non-cancerous in two generations at least is exact. It was notable that the great majority of the cancerous fraternities occurred in small families; and in many of these the patient from whom the material examined for diagnosis came was the surviving member of the family line. In families showing these cancer-generations the carcinoma may appear in three or four generations, or there may be an intervening generation the members of which are not cancerous or more rarely a collateral transmission may be shown. In some cases all of the members of the small family are cancerous. By far the great major-

ity of these are females; and the family is in a large proportion of cases brought to an end by death of its female members through carcinoma of the breast or of the uterus.

The results of our study of this material may be summed up as follows: In the histories of the cancer cases coming from the state of Michigan and examined at the Pathological Laboratory of the University about 15 per cent. show a striking history of multiple family occurrence. When the difficulty of obtaining good histories is considered this proportion is relatively high; and, on the whole, corresponds fairly closely with the percentages obtained by Williams. We must conclude, then, that a definite and marked susceptibility to carcinoma exists in certain families and family generations. This family tendency is usually most pronounced when there is a history of cancer in both paternal and maternal lines. In such families there is an especial tendency for carcinoma to appear at an earlier age than in the forebears, and in these younger individuals the cancer usually shows an increased malignancy, developing more rapidly and setting up general metastases more quickly than in cases from which we can obtain no family history. Whenever we have a case of carcinoma appearing in an individual before the age of 35 we take especial pains to look up the family history with this especial point in mind to determine if there has been a history of cancer in previous generations; and in a relatively large number of cases this has proved to be the case. I therefore consider the prognosis bad in those cases of carcinoma in relatively young people who have a family history of multiple occurrence of cancer. This is also true in the cases of carcinoma coming from families where there is a history of tuberculosis on both sides. Our results corroborate those of Williams. We find that tuberculosis is the most commonly associated family disease in families having a multiple occurrence of carcinoma and that in many cases cancer terminates a family line that has suffered severely from tuberculosis. The association of the two diseases in families showing our cancerous fraternities is very striking. We also find, as did Williams, that many of these families a few generations back showed a high grade of fertility with large families of children, but that in the present generation there is a markedly lessened fertility and in many cases the cancerous individual terminates the family line. Family susceptibility to carcinoma we find to be shown in carcinoma of the breast and uterus in females and of the mouth, lip, stomach and intestines in the males. Rodent ulcer affecting some portion of the face shows frequently a history of multiple family occurrence in several generations. In the more complete family records studied the carcinoma manifests

itself in the breast or uterus in the female usually, and in the gastro-intestinal tract in the male. This specificity of location has been noted by Williams, Levin and others. Next to tuberculosis we have found cardiac and renal disease most frequently associated with a family history of carcinoma.

Giving due consideration to possible errors in diagnosis in previous generations and the difficulty of obtaining accurate histories, I am still convinced that there is a definite and well marked family susceptibility to cancer in many family lines; and I think it is very probable that if we can have better and more complete histories the multiple occurrence of cancer in family lines would be found to be very much more frequent than our histories now show. I think we are perfectly safe in concluding that certain families show a definite cancer susceptibility and that this is inherited often in a progressive rate of inheritance, the susceptibility being dominant rather than recessive, as Levin concludes from his study. I do not think that the data are at present sufficient for us to apply the Mendelian principles to cancer heredity. Some of my cases agree fairly well with Levin's, the percentage of cancerous members in each cancerous fraternity corresponding fairly closely to the Mendelian percentage of members with recessive unit characters in a hybrid generation. If I considered the data sufficiently conclusive for any generalization, I would say that they point toward the existence of a progressive generative inheritance, the running out or extinction of a family line through the gradual development of inferior stock from an inheritance of susceptibility to tuberculosis and cancer, such an extinction often developing in two generations in a family previously marked for excessive fertility and longevity.

With the growing interest in eugenics and in family records very careful attention should be paid to all of these points, and in hospitals such as the University of Michigan Hospital, where such a large amount of cancer material is seen, a special effort should be made to collect accurate data concerning the families of cancerous patients. When such data are obtainable definite conclusions may be drawn.

DISCUSSIONS

DR. CHARLES B. G. DEANCREDE: This paper is of great interest. The method employed by Dr. Warthin is to be commended, provided we bear in mind the fact that we never can correctly estimate the natural history of carcinoma or the unquestionable results of treatment until we understand the cause of cancer. Again, we cannot be certain of our pathologic data until two or more generations of competent pathologists have examined every specimen adequately, included in the statistics, because too many museum specimens now exist, which can yet be correctly diagnosed, which would be found incorrectly labelled if studied by a modern pathologist.

Dr. Warthin, when studying the eighteen hundred cases which have passed beneath his scrutiny during the past eighteen years, excludes two-thirds because the histories are inadequate, taking about six hundred, where the data seems fairly reliable. Of these, however, only about fifteen per cent. apparently demonstrate his views as to heredity. Of the cases with acceptable histories the majority were treated by me and in my service at the University Hospital. I regret to state that I am confident that many of the histories of my cases in the accepted class were decidedly unreliable and that of the remaining eighteen hundred thoroughly reliable accounts, if securable, might either enormously reinforce Dr. Warthin's arguments, or equally likely weaken his contentions. I have so often found my students' histories so misleading for even a clinical diagnosis, that when reliable evidence as to family history is requisite, I have to sift all the evidence myself, often being able to arrive at no conclusion or perhaps one absolutely different from that arrived at by the historian. I have a very distinct opinion regarding the lack of proof as to the hereditary nature of carcinoma, despite my early teaching that this was an unquestionable fact. Many of our convictions cannot be proved by actual evidence in our present state of inadequate information. If the experience of forty-odd years have radically changed my opinion on this point there must be reliable grounds for such a change of front, which should have some weight.

I am also inclined to give some weight to the possible failure to eliminate from our historical, and their therapeutic statistics, the fatalities resulting from operations and their complications; were these always deaths from carcinoma, or were they assumed to be because of the fatal results, without adequate histologic examinations? Again, if these patients had not died as the result of operation, might not some of them really proved to have been cures, so vitiating the mortality results? These, and other objections must in all honesty be carefully weighed when attempting to decide any question merely or chiefly by statistics. The rather curious association of tuberculosis and carcinoma, which in my professional youth was denied as a possibility, has been verified in a number of patients, the specimens of which have been reported upon by Dr. Warthin.

I have been greatly impressed by the data presented by Dr. Warthin and hold myself ready to review anew my conclusions concerning the whole subject of carcinoma.

I trust that I shall not be understood as arriving at my conclusions concerning carcinomatous heredity from the six hundred cases included in Dr. Warthin's expurgated statistics, or the probable one thousand cases where I have been the operator or have in some way been cognizant of the patients, but what I learned in my hospital and private experience of the more than twenty years before I came to Ann Arbor.

DR. CYRENUS G. DARLING: While listening to Dr. Warthin's very able address, two points came to my mind. He says that the German cancer survey was without benefit, but he has not stated that a properly conducted survey might not be useful. Why not have such a Michigan cancer survey? Why should not such an important project originate in this Society? We know little or nothing about the results of our numerous operations for this disease, except in a few cases in our own immediate neighborhood. A survey might enable us to determine some of the important facts. It would be well for Dr. Warthin to prepare a list of questions which should be answered by every cancer patient coming to the University Hospital. This paper should be left with

the house physician and made out by him as a part of the admission history.

DR. UDO J. WILE: I have been amazed at the relatively large number of cases of cancer of the skin that occur in this vicinity. In a clinic in New York in which over three thousand cases were treated each year I can recall but three or four cases of epithelioma. During the past year at the University Hospital of over eight hundred cases treated there were forty-four cases of cancer of the skin. We have been careful to note in these cases the occurrence of any family history. Offhand I should say that about 15 per cent. give a history of cancers in other members of the family. Curiously enough these have been for the most part cancers of the skin also, rather than visceral neoplasms. We have also noted that the occurrence of cancer in the patient's family has usually been on the maternal side. I should be glad to turn over these records to Dr. Warthin should he desire them.

THE OCCASIONAL PRESENCE OF THE APPENDIX VERMIFORMIS ON THE LEFT SIDE OF THE ABDOMEN, WITHOUT TRANSPOSITION OF THE VISCERA EXPLAINED. ILLUSTRATED BY AN OPERATED CASE.

CHARLES B. G. DE NANCREDE, M.D.

Professor of Surgery, University of Michigan.

(From the Surgical Clinic, University Hospital, Ann Arbor, Michigan.)

A brief preliminary summary of the facts pertaining to the development of that portion of the intestinal tract with which we are now concerned will obviate later explanations, will probably explain certain errors made when reporting cases, and, it is to be hoped, will prevent unnecessary manipulations and some disastrous errors when operating in the abdominal cavity. Only approximate estimations of the time after impregnation when the changes described are to be noted can be given, because they continuously progress, are not sharply defined, one observer considering as recently accomplished that which another considers in process of evolution.

About the close of the tenth week of gestation the somewhat left sided practically straight intestinal tube has assumed an U-form and the cecal bud and the rudiments of the appendix are recognizable, and the cecum occupies approximately the umbilical region. About the close of the fourth month the cecum reaches its usual prenatal position beneath the right lobe of the liver by a process of so-called rotation, passing in front of and across the superior mesenteric artery and duodenum, subsequently to descend into the right iliac fossa, this descent occurring, according to some observers about the sixth month of intrauterine life; according to others this may not occur normally until after birth.

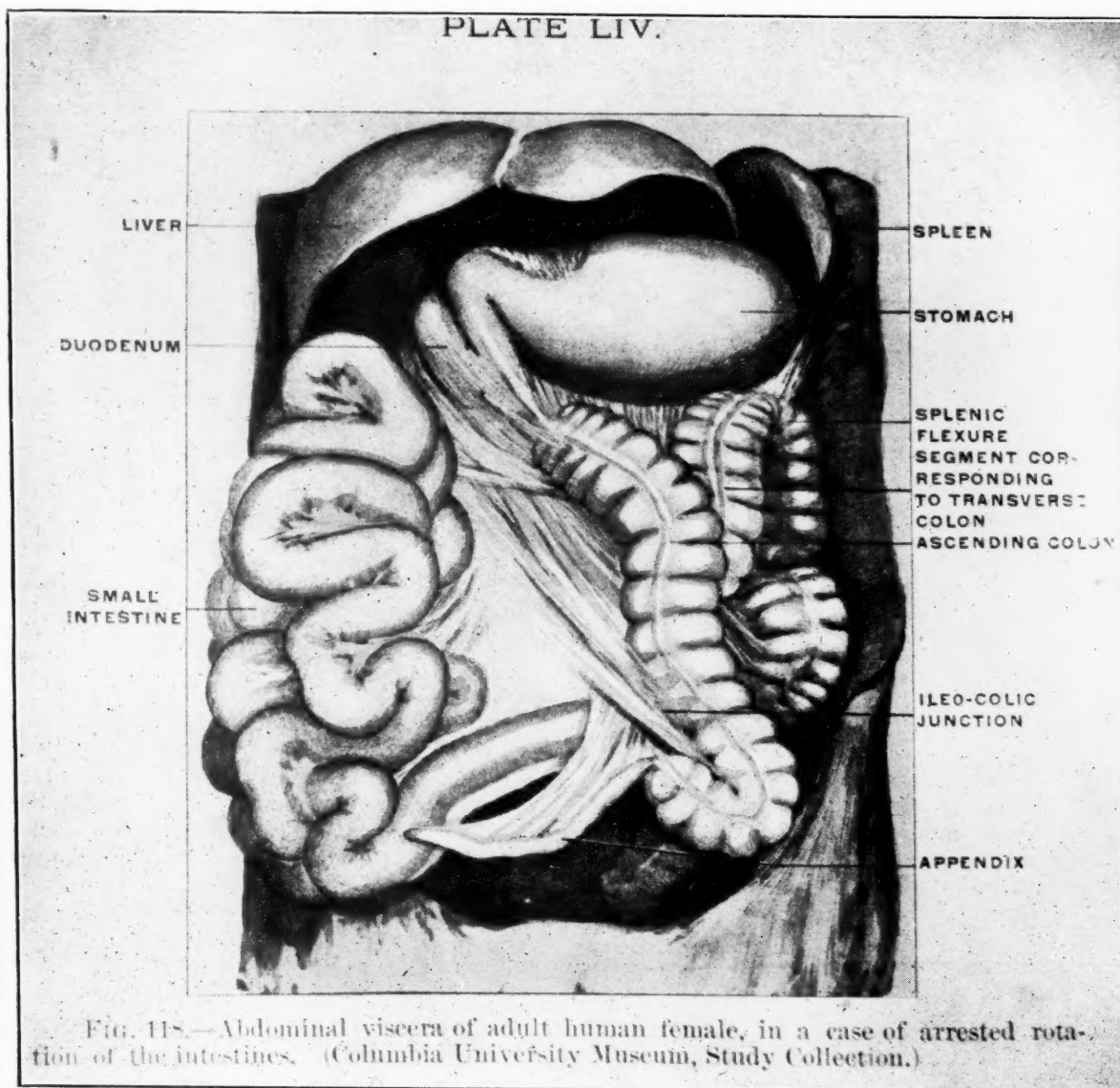
While the few photographs¹ presented by no

1. George S. Huntington, *Anatomy of the Human Peritoneum and Abdominal Cavity*, page 60.

means exhaust the possible abnormalities of location and course of the colon, they should prove adequate for the present purposes. Numerous still more complicated and puzzling possibilities can obtain², induced by the traction of inflammatory adhesions alone, or from the effect of these, superadded to congenital variations; with such we cannot at present concern ourselves.

The patient, Paul B., age five, was admitted

and increased in severity until October 25, when it was somewhat lessened for the next three days, but on October 28, the day before admission, it returned with renewed violence. The temperature on admission was 100° F., the pulse was 120, and the leucocytes were 16,000, increasing on the day of operation to about 18,000. General distention and rigidity of the abdominal walls was present, both distinctly more marked on the left side. There was a



to the University Hospital October 29, 1913, having been ill eleven days. On October 18, he complained of headache, but so far as could be gathered nothing else was noted. The next day he said that he had severe pain in the abdomen, locating it chiefly on the left side. After the administration of medicine by the mouth he vomited once. The pain continued

doubtful impairment of resonance with slightly increased resistance and tenderness over the usual site of appendicitis as compared with the more central portions of the abdomen. A left-sided mass was continuous with a median area of dullness which proved to be the bladder. Withdrawal of nine ounces of urine with a catheter removed this median dullness, but the left sided mass remained. My assistants believed that they had detected per rectum a right sided pelvic induration and certainly peritoneal

2. For diagrams of a number of these see an excellent article by Carl E. Black in the *Annals of Surgery*, Vol. 56, page 880.

tenderness in that situation. Under anesthesia the problematical right sided dullness on percussion and mass could not be certainly verified, but was believed probably to have been caused by the tense condition of the parieties; the left sided mass was now more readily detected.

Every operator occasionally meets with cases of appendicitis where the tip of the organ crosses to the left side of the abdomen, or at least the main inflammatory focus seems to be located in this region when first examined by

long since been said about appendicitis, but the importance of recording cases like my own lies in several facts. First, when a right sided source of inflammatory abdominal trouble is not clearly indicated by the detection of a mass in this region by external palpation or rectal examination, while a left sided induration exists, any exploration must be attempted by such a method that by suitable modifications, both sides of the abdominal cavity can be reached. Again, when search in the right in-

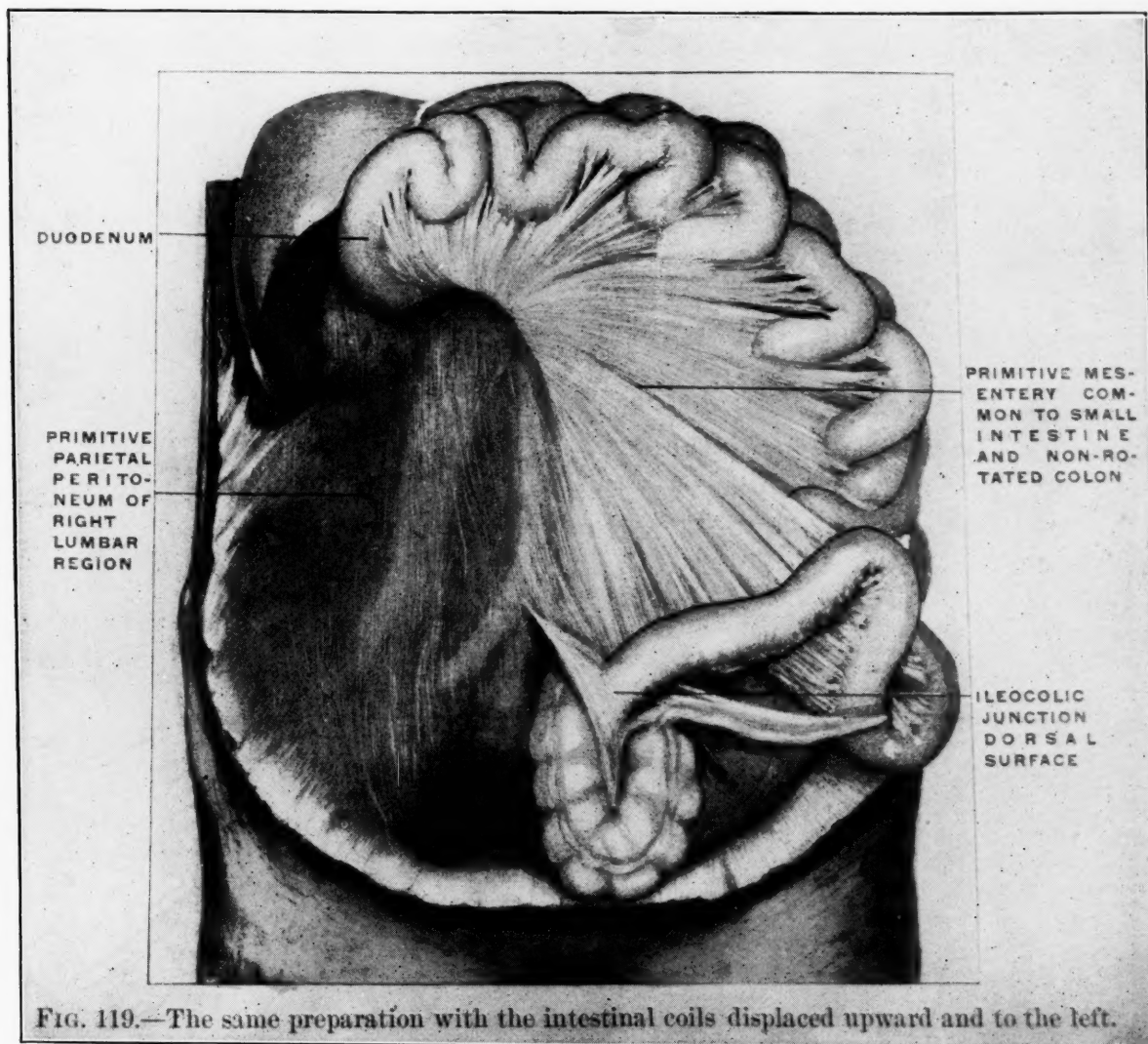


FIG. 119.—The same preparation with the intestinal coils displaced upward and to the left.

(Columbia University Museum, Study Collection.)

the surgeon. Of course with complete transposition of the viscera, which is rare, appendicitis should be left sided, but a left sided appendicitis is more often spoken of than seen, this condition being somewhat simulated by a suppurative diverticulitis. This latter disease however, does not give rise to confusion in young children because the precedent pathologic alterations of the colon wall are not believed to occur in early life, these being more usually seen in adults, especially in middle life or advanced age. One would think the last word has

guinal regions and hypochondriac regions, in cases diagnosed as appendicitis does not promptly enable the operator to locate the caput coli, or an inflammatory mass, search should at once be made on the opposite side. In my case a distended rigid condition of the abdominal walls rendered an accurate examination difficult, while the reported detection of a right sided mass by palpation and per rectum obscured the diagnosis. Still further, a greatly distended bladder fusing with the left sided mass was open to the possible, although un-

likely, explanation that this organ had been incorporated with an inflammatory mass and dragged over, the trouble originating in a normally located appendix with its tip extending sinistrally across the abdomen.

My first impulse therefore to make a left sided incision was resisted, and a right sided one splitting the rectus was made. Search for a normally placed caput and appendix was rapidly completed, only somewhat congested coils

active result was secured, the steps of which will not be detailed because they are of no particular interest. A careful study of the relations was readily made out, the caput occupying the same position in the iliac fossa as it usually does on the right side, the ileum entering normally, the usual amount of this intestine filling the true pelvis. The colon ascended upwards towards the spleen if it did not actually reach it, seemingly forming a splenic flexure instead

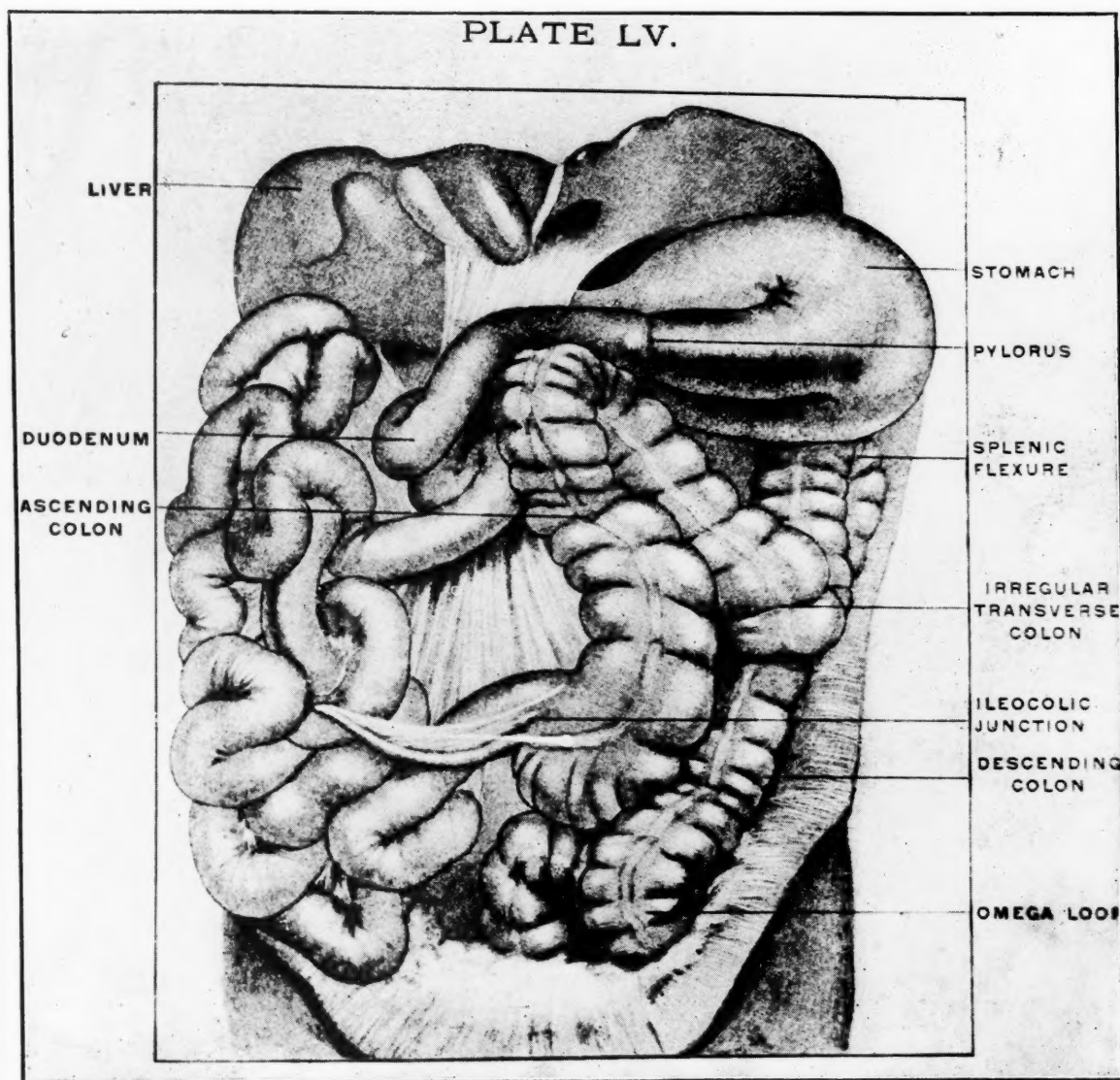


Fig. 120. Abdominal viscera of adult human male; non-rotation of intestine.
(Columbia University, Study Collection.)

of small intestines being found, even normal omentum being absent on this side. Per contra, on the other side the usual mass of omentum adherent to everything in its neighborhood was found, imprisoning the caput coli with a perforated appendix surrounded with pus, containing a loose concretion.

While it was not so easy to conduct the subsequent manipulations as if the incision had been made more to the left, a satisfactory oper-

of an hepatic one. Not wishing to infect the remainder of the abdomen by free handling in the presence of pus, the relations of the splenic and hepatic flexures, and the transverse and descending colon were not made out exactly, but as far as observed were otherwise normal although displaced so as to simulate partial transposition, but a study of the exact conditions shown by the illustrations reproduced from the actual conditions found in cadavers

show how readily I may have been deceived, except as to the relation of the caput, appendix, and ileum.

Figs. 118, 119, 120, 121 will show the conditions presented by non rotation of the colon in the adult, while Fig. 123 shows non rotation of the cecum yet with the appendix in the right iliac fossa. Fig. 122 shows what was very possibly the condition in my case, contrasting well with the almost normally placed appendix although the rotation of the cecum was partially arrested. The perfect or imperfect rotation of

some dullness. Examination per rectum revealed a cystic mass. The patient had been taking morphine and complained of no pain. However, on careful inquiry it was found that the patient had not passed urine for the last thirty-six hours. The patient was catheterized, and about ten ounces of urine drawn off. Subsequent examination revealed no mass in the rectum, and the dullness on the right side had disappeared. Apparently the distended bladder had been the cause of the right sided findings, a fact which should always be taken into consideration in other obscure cases. One other interesting point is the efficiency of an exploratory incision. Through a right rectus incision it was possible to attend to all conditions arising in the left side of the abdomen,

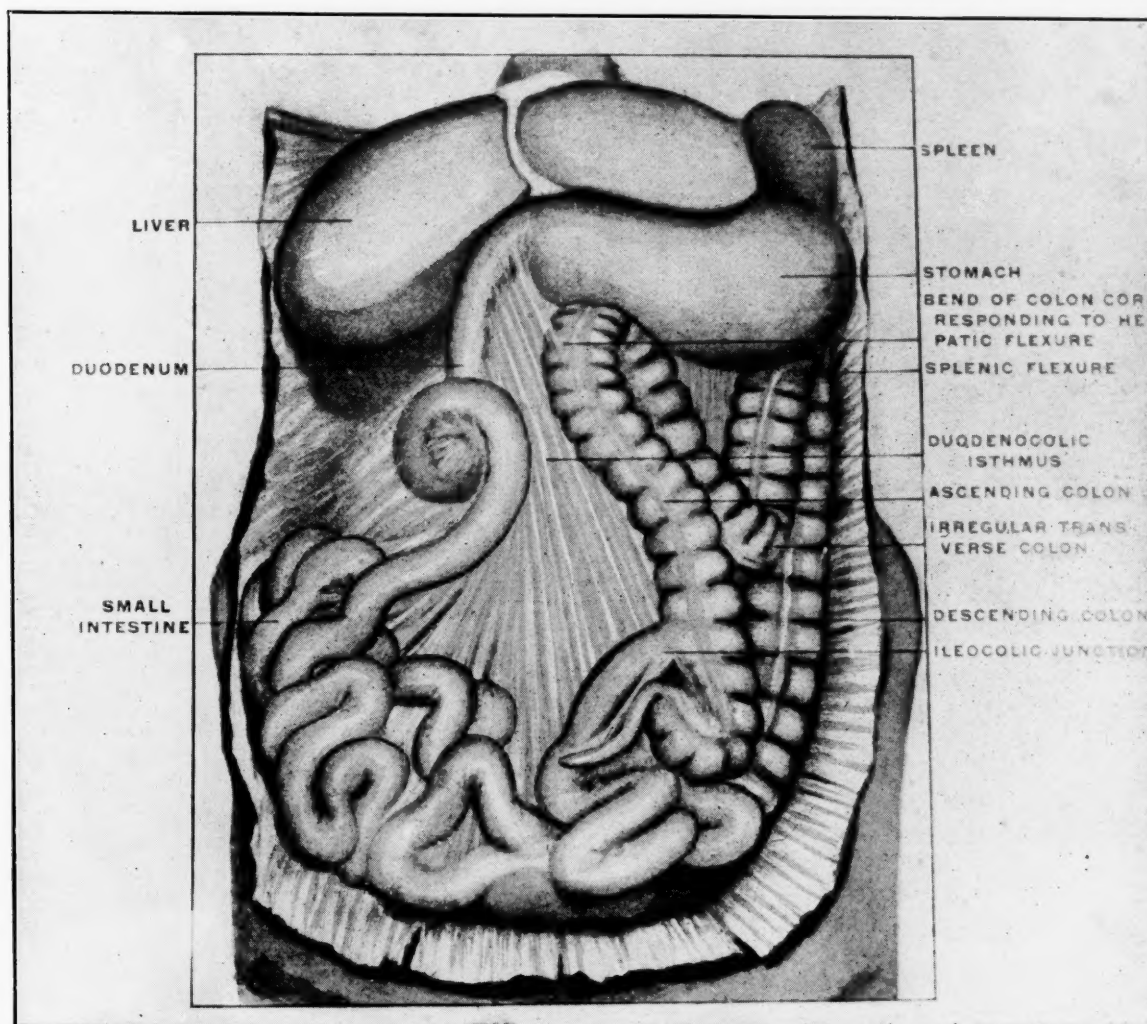


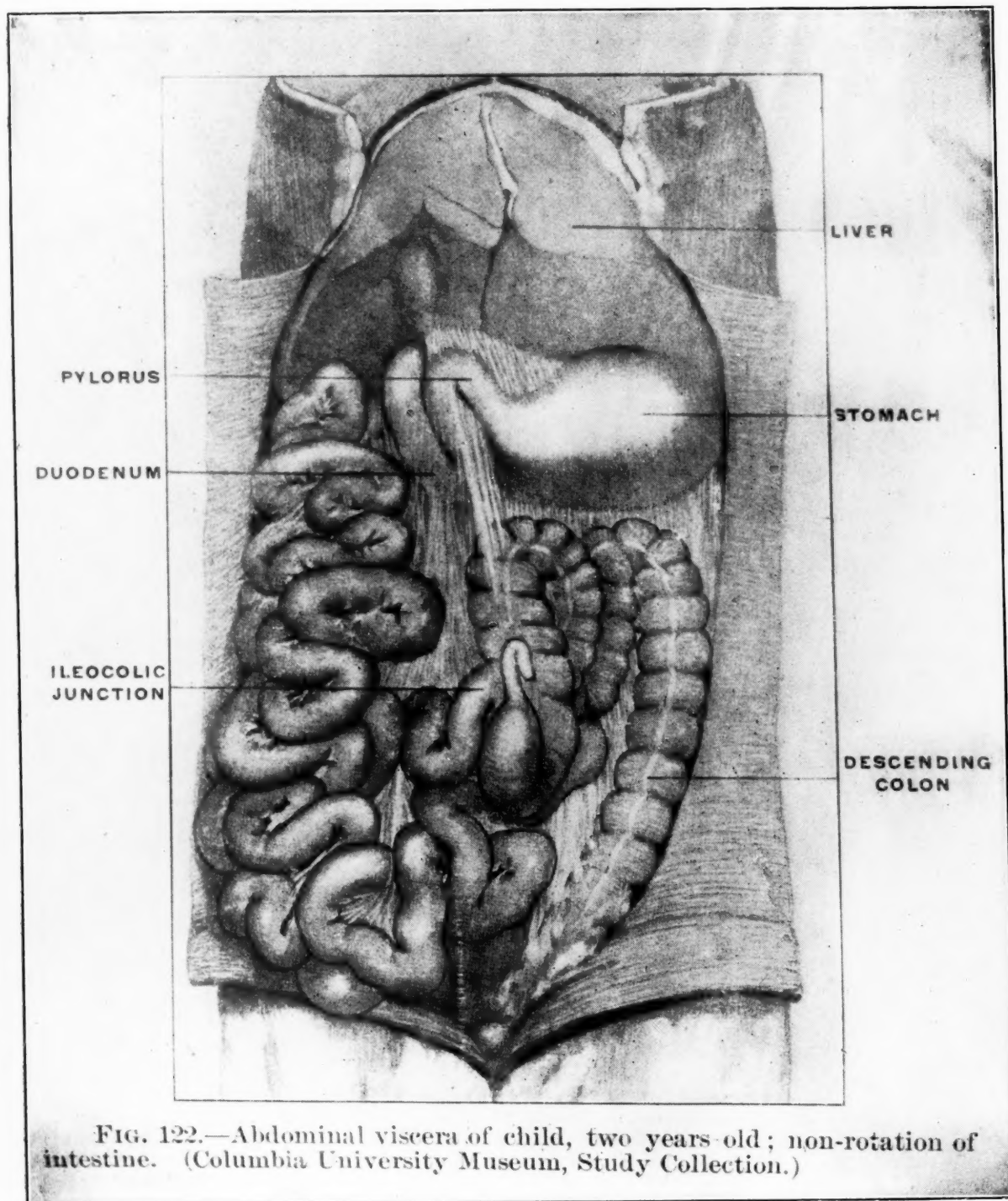
Fig. 121. Abdominal viscera of adult human male; non-rotation of intestine. (Columbia University, Study Collection.)

the cecum doubtless accounts for some of the common locations of the appendix which are too often described as abnormal.

DISCUSSION.

DR. WALTER A. HOYT: This certainly is a very interesting case, and emphasizes the desirability of taking a careful genitourinary history, not alone to rule out any disturbance of the genitourinary tract, but to enable one to make a better diagnosis of abdominal conditions. I saw this patient when he first entered the Hospital. Examination at this time showed a mass in the left side. Percussion over the right side revealed

which as had been shown extended well into the iliac region. From the first, the patient did not drain well, although a tube drain was placed in the main incision, and a counter drain placed in the left side. Bichloride dressings were applied, but did not bring about an increase in the drainage. On the third day when a great deal of drainage should have been present, there was none at all. The tube drains were syringed out with sterile salt solution, and it was found that both tubes were blocked by broken down tissue and pus. The patient straightway started to drain, and had no further trouble. The patient's recovery after this was uneventful, and he was discharged day before yesterday in good condition.



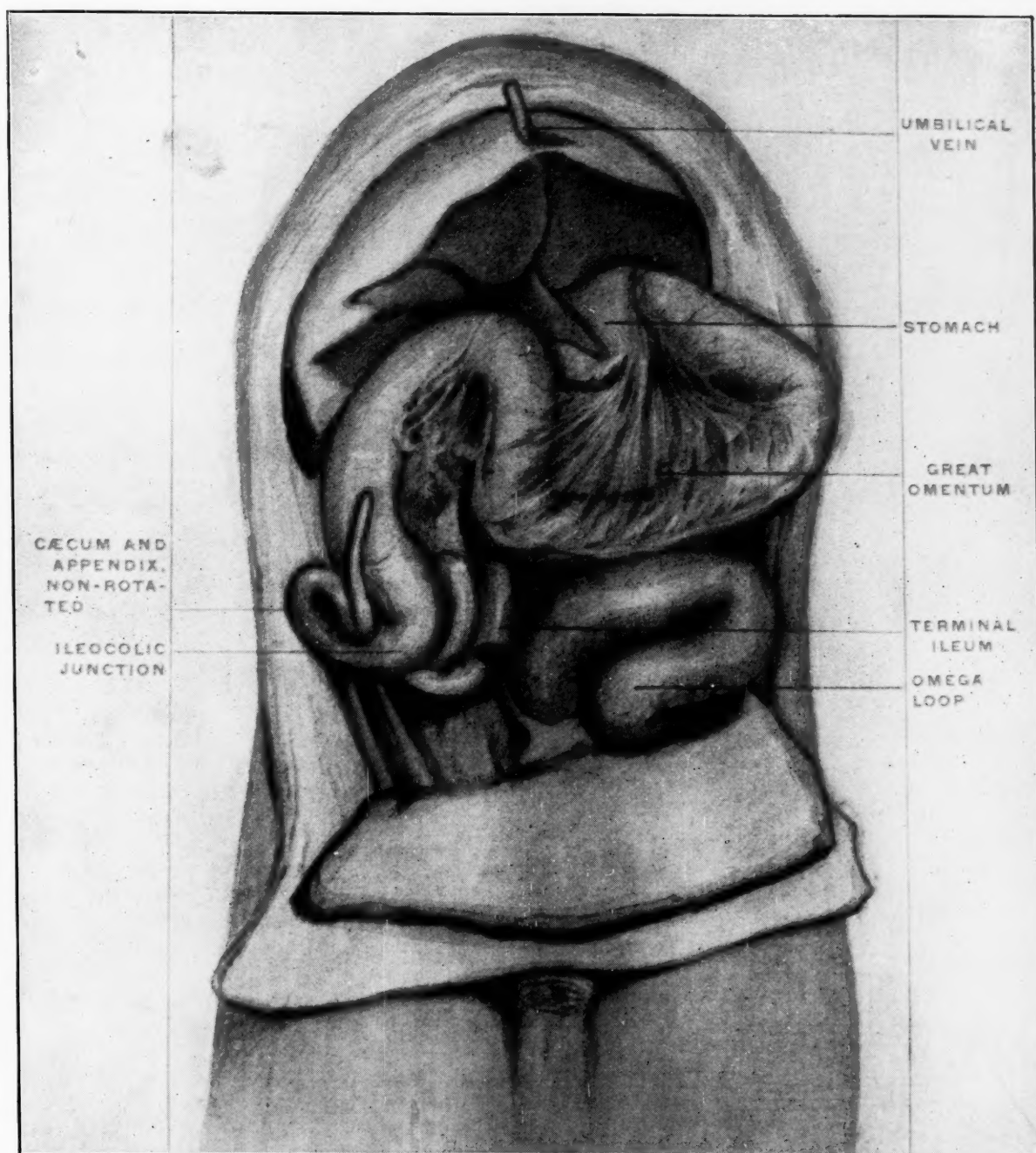


Fig. 123. Human foetus at term; abdominal viscera, hardened in situ; non-rotation of the caecum.
(Columbia University Museum, No. 1813.)

WOUNDS OF THE FEMORAL ARTERY.

CYRENUS G. DARLING, M.D.

Clinical Professor of Surgery, University of Michigan.

(From the Surgical Clinic, University Hospital, Ann Arbor, Michigan.)

My first real intimate acquaintance with a wounded artery of the lower extremity took place several years ago under the following peculiar circumstances. The owner of this artery, a young man of twenty, was standing on the sidewalk in his home town. It was the evening of the Fourth of July and the town, though nearly bursting with patriotism, did not possess a cannon.

The people were able to make an old fashioned noise by firing an anvil. More noise was desired and the noise could be increased if the hole in the anvil could be made to hold more powder. To meet these indications, the hole was prolonged by using a nut such as holds the wheel to the axle on a lumber wagon. This hole was filled with powder and the noise was a success but the force of the explosion tore the nut in pieces, all but one piece passing harmlessly away in the air. The important piece came toward the young man on the sidewalk, struck the median flap of his trousers and entered the flesh above and to the left of the pubes.

The size of the projectile and the depth to which it had penetrated the tissues was a matter for speculation, as only a small wound appeared upon the surface, where the soft parts had at once closed around it so that a probe, when inserted, did not come in contact with the metal.

The hemorrhage, at first sharp, was soon controlled by an antiseptic compress and the patient was placed in bed in a recumbent position where he remained for a week without any unusual happenings. About the eighth day when he arose to a sitting position as he had done before, there was a sudden gush of blood from the wound, which ceased, however, as soon as he again resumed the recumbent position.

The same accident happened again later in the day and I was called by his physician. The leg was cool and a little swollen but no signs of infection were present. There was no sign of pulsation in the femoral artery below Poupart's ligament, so I decided that the iliac externus was wounded and that the missile blocked the opening or pressed upon the vessel.

I enlarged the abdominal wound upward until I could introduce my finger, feel the relation of the missile to the vessel, also compress the vessel above the wound with my finger below the vessel and my thumb on the skin outside. Thus prepared I removed the piece of iron. At once, there was a large spurting

stream of blood, which, owing to my being prepared, was easily controlled, but at the same time confirmed my suspicion of a wounded iliac artery. I directed my assistant to cut down upon the vessel below my point of compression and ligate it. This was easily accomplished and the hemorrhage was completely controlled.

I did not ligate the vessel below the point of injury because it was already plugged with a clot eight days old and would be safe unless disturbed by infection. Also I did not wish to invite infection by disturbing the wounded tissues more than was necessary. I thought this an unusual condition at the time, a missile tearing a hole in a main artery, entirely blocking the wound, thus preventing severe hemorrhage and at the same time completely shutting off the circulation below. The treatment was unique in that a wounded iliac artery was ligated above the wound only, to control hemorrhage.

The missile was one half of the large nut that had been used to increase the length of the hole in the anvil. Collateral circulation had been so well established during the week preceding my ligation, that recovery took place without disturbance to the leg.

Another important experience was with the femoral artery in 1898, when A. A., a lad of 16 years, entered the University Hospital because of an arteriovenous aneurism on the right side about four inches below Poupart's ligament. This pulsating tumor followed an injury incurred five years before by accidentally plunging a sheep shears deeply into the thigh, wounding at the same time both artery and vein. The wound was dressed and the patient was placed in bed. He seemed to be making a good recovery but two weeks after the accident he got up and walked a little. While returning to his bed he had a sharp pain at the seat of the wound. He felt a buzzing sensation and soon discovered that a swelling as large as an orange had formed at that point. He remained in bed about one month longer and the tumor diminished in size. When he entered the Hospital it was larger than a hen's egg and a distinct thrill could be felt in the large veins of the leg as well as in the tumor. Both artery and vein could be felt pulsating above the injury.

He walked on this leg for nearly five years and probably would have continued at his work as a farm laborer if an ulcer had not appeared one month previous on the inner and lower part of the thigh as a complication. This ulcer not only refused to heal but grew larger. As it was in the immediate neighborhood of pulsating veins, he had been warned, that these might break at any time and result in death from hemorrhage. This brought him to the Hospital and he came expecting an amputation,

but was willing to accept ligation instead, or any operation, which might save his leg.

In January, 1897, Dr. John B. Murphy of Chicago, published in the Medical Record a number of experiments on the surgery of the arteries and two operations upon the femoral vessels. These reports were very inspiring and contained the first known successful end to end suture of a severed artery.

His first case was a wound of the internal saphenous vein which was closed by continuous suture. The femoral vein was also injured and sutured in like manner. The femoral artery was not sufficiently damaged to require operation, although a piece of its surface was torn. The wound healed, but one week later a tumor formed, which had to be opened and a clot four inches long turned out. The femoral artery was found to be eroded for more than an inch on its inner side and resection of this vessel became necessary. About one inch and a half was removed and the ends ligated. Two ligatures were applied above and one below.

The second case reported at the same time was a gun shot of the femoral artery, causing an aneurismal tumor. This was operated three weeks after injury by resecting the vessel and suturing the ends together. The wound in the artery was three-eighths of an inch long and one half inch was removed. The proximal end was inserted into the distal end and sutured in place. The femoral vein was also sutured. The patient is said to have made a good recovery.

I had a vision of suturing the vein in my case but did not finish it that way. An incision about six inches long was started just below Poupart's ligament and carried over the tumor in the line of the vessel. My dissection first exposed the vessels above the tumor and a ligature was carefully placed around the artery and another around the vein for future use.

The vessels were then exposed in like manner below the tumor and ligatures placed ready for tying. The tumor was then exposed but the vein was greatly enlarged and the relations to the artery were so intimate that I was obliged to tie my ligatures and remove the sac. The patient was put to bed with the leg elevated and well protected with cotton for several days. At the end of two weeks he was allowed to let it hang down for a short time to test the circulation and when he left the Hospital it was in good condition. This leg had five years' preparation for a feeble circulation and bore it well.

Another patient with injury to the femoral artery, Mr. B., of Battle Creek, was admitted to the University Hospital, June 22, 1913.

He was twenty-five years old and gave the following history concerning the formation of a tumor on his right leg: Three weeks ago, while repairing a shoe with a pocket knife, the

knife slipped and the blade, which was about one and one half inches long, entered full length into the right thigh on a line of the femoral artery above Hunter's canal about five inches below Poupart's ligament. The immediate hemorrhage was stopped by tying a rope tightly around the limb above the point of injury. When the rope was removed it was dressed with a compress and a tight bandage. This dressing remained in place three days, when it was removed and was replaced by a similar dressing, which was allowed to remain for the same length of time. The whole limb was swollen and painful, but there was no suppuration, and the wound healed without signs of infection.

Present condition: The whole extremity is swollen and the patient is unable to walk. There is a tumor about the shape and size of a pear and the surface is reddish purple in color. There is a scar on the most prominent point which shows where the knife entered the thigh. Pulsation can be felt in the veins in the vicinity of the tumor and a distinct bruit or thrill is very pronounced in the tumor itself. There is a numbness below the wound, which extends well down the inner side of the leg. The tissues are tender and sore and the patient complains greatly of pain which seems to radiate from the tumor.

Diagnosis: Aneurism of the femoral artery, due to a knife wound of that vessel.

The patient was placed in bed with the limb elevated and was carefully watched for three days to see that no suppuration was pending, also to favor the reduction of the swelling. The leg had been injured sixteen months before in a railroad accident and the patient informed us that some swelling from this accident remained when the present one occurred.

With rest and elevation, the swelling decreased but the tumor remained as prominent as ever. The operation was performed on June 25, 1913, four days after the patient entered the Hospital. After the usual cleansing, the femoral artery was exposed about three inches above the point of injury and a Crile clamp applied with sufficient pressure to prevent any flow of blood. About two inches of the artery was exposed below the tumor and another clamp was applied. The tumor was then opened and the wound in the vessel exposed. The laminated clots, which formed the walls of the sac were carefully removed until healthy tissue was found. The wound was little more than half an inch long and directly in the line of the artery. There was no enlargement of the vessel at this point but the edges of the wound were nearly one twelfth of an inch apart in the middle.

After removing all of the clot and the newly formed tissue, the edges of the wound of the artery were freshened by scraping with a nar-

row sharp knife. An attempt was then made to suture the wound by using a very fine needle and white silk such as is put on the market by the supply houses for that purpose, but this was a failure. We were not successful in passing the first stitch because the needle broke. We succeeded in passing the stitch with a second needle, but in tying it the thread broke. These were then discarded for the fishhook needle and ordinary fine black silk thread and we were able to place and tie all the necessary stitches without breaking either thread or needle. Five stitches were employed, they were placed well back from the edge of the wound and passed through all of the coats except the intima. In tying each suture care was taken to approximate the edges of the incision without unduly narrowing the vessel. The lower clamp was then removed and the blood allowed to enter the vessel from below. There was slight oozing from one point which ceased after sponge compression for five minutes. After waiting fifteen minutes for a coagulum to form, which would seal the vessel before full pressure of the blood stream from above was allowed to enter, the clamp was partially loosened, the blood flowed through and there was no leakage. Before the clamp was entirely removed, the sheath of the vessel and the adjacent tissues were closely folded around the point of injury and sutured in place with fine catgut. The skin was sutured up to the upper Crile clamp and this was removed some time later.

There were some bleeding points at the upper angle of my incision so deep that an extension of the incision would be necessary in order to ligate them. Instead of doing this, the hemorrhage was controlled by two forceps which were left in place and the upper part of the wound was left open for the following reasons: To allow the forceps to remain on the vessels, which could not be ligated; To readily detect any leakage from the repair; to allow drainage of damaged tissues, which might easily become infected and in turn infect the vessel wound if fluids were allowed to accumulate in contact with the sutures; Last of all that the vessel could be promptly secured in case of secondary hemorrhage.

The patient was put to bed with the limb flexed in a comfortable position and the knee supported upon pillows. When the patient became very tired and suffered pain because of the fixed position codeine was given. The forceps were removed at the end of twenty-four hours. The loose packing was removed on the third day and the wound closed. From this time recovery was uneventful. The temperature arose to 101 on the third day and remained at that point but a short time. Pulsation was good in the posterior tibial artery, which showed that the operation was a success. Twenty-one

days after operation, he was allowed to walk about and left the Hospital July 22, just one month after entering.

Here are some of the lessons which I learned from this operation: That any accessible wound of the large vessels can be repaired by using an ordinary fine needle and thread. That the required material which is furnished by the trade may do very well for laboratory purposes but cannot always be depended upon in actual practice. That the formation of clot will help to seal the slight remaining wounds if the clamp is closed and compression is maintained over the point of leakage for a longer time than is ordinarily required for the coagulation of blood. That the upper clamp should be slowly and carefully released after the rest of the wound has been closed. In a doubtful case, a provisional ligature should be left in place on the vessel above the wound, which can be closed or tied immediately in case of severe leakage.

The pathologist reports that the tissues from this case, particularly the inner layer, have the appearance of the walls of an abscess. *Trichinae* were also found in these tissues.

Wounds of the femoral, though frequently seen in military surgery, are of rare occurrence in private life. Bryant and Bucks surgery published in 1910, reports twelve cases of suture of lateral wounds of the femoral alone. If other cases have been reported in this country since that time I have failed to find the reports. There are very few cases of arteriovenous aneurisms of the femoral reported. Lund of Boston in 1908 reported a case of stab wounds of both femoral artery and vein, which were successfully repaired nine days after the accident. Sherman of California reported a similar successful case about the same time. Both of these cases had a double injury to the artery and one to the vein, the knife being carried through the artery and into the vein.

G. T. Vaughan of Washington D. C., in 1910 reported a double wound of artery and vein three inches below Poupart's ligament, which was repaired eighteen days after the accident. Though the vessels were diminished in size by the repair the recovery was good with pulsation.

Quite recently a number of attempts have been made to cure gangrene of the lower extremity, or at least prevent its extension by establishing an arteriovenous circulation in the femoral region. San Martin was the first to try it by making a lateral anastomosis between the femoral artery and vein. Hubbard in 1906 made an end to end anastomosis of artery and vein but without success. Muller of Philadelphia, collected ten cases in which the operation had been done in various ways with poor success.

These attempts, though many failed, have

developed some good ideas about the methods of operating. McMillan and Stanton of Schenectady found by sad experience that wide separation of a vessel from its sheath might result in necrosis of the vessel itself.

Matrass or continuous sutures may be employed according to the conditions of the parts or the fancy of the operator. The continuous suture is employed not only to repair lateral wounds of the artery, but circular cuts and resections as well.

Ordinary sewing needles straight or curved, may be used provided they are not too large. Fine silk, white or dyed is commonly used. The white is preferred because the dyed silk loses its strength in the process of coloring. Catgut has been discarded as it absorbs too soon for safety. The threads may be smeared with sterile vaseline, to make them run smoothly and to prevent kinking. The vaseline may also be applied to the repaired wound, to fill small openings and favor the formation of small clots.

Of all the blood vessels the femoral artery is best fitted for surgical operations. While its exposed position makes it liable to injury, it is accessible and easily repaired. It has the thickest walls of any vessel except the aorta. It is more frequently injured than any other of the large vessels except the axillary and has a larger number of successful repairs to its credit than that vessel.

Much that I have said concerning surgery of this artery applies equally well to the other vessels.

DISCUSSION.

DR. CONRAD GEORG, JR.: I desire to compliment Dr. Darling upon his brilliant success with this operation. I have had similar experience in my experimental work upon the suture of blood vessels. First the needle and then the sutures would break and the latter were very difficult to tie, so I can appreciate the difficulty that Dr. Darling had with this operation. I spent about two hours in suturing the common carotid artery of one dog to the external jugular vein of another in an attempt to perform a direct transfusion of blood. Furthermore, this operation confirms the opinion I have always held, as a result of my experimental work upon the blood vessels, that if I should ever perform this operation upon the human being I would use a stronger suture than that recommended by Carrel and Guthrie for experimental work upon dogs. In the human being we have larger vessels to deal with and a stronger force of blood stream than in dogs, which these sutures must resist and a small suture will not stand the strain. The needles I have used for this work are the No. 12 Kirby needle, which is much smaller. I had difficulty in purchasing the latter needles as none of the wholesale houses in New York or Philadelphia had them. Eventually I had to send to London, England, where they are made. These needles are the smallest I have ever seen and will

break in your hand if you exert very much pressure upon them. The operation of suturing blood vessels is an extremely difficult one. The suture which does not include the intima is the preferable one where it can be used. As the technic of end to end anastomosis is slightly different from lateral suture I will describe it. In the first place the vessel is prepared as Dr. Darling did by putting on Crile clamps or some similar instruments protected with rubber to stop the flow of blood through the artery while it is being repaired. Great care is necessary in doing this for fear of injuring the intima which is fatal to the operation. The vessel is then cut through and all blood clots washed out with normal saline solution. Next the adventitia is grasped with a fine pair of forceps drawn over the end of the vessel and cut flush with the end when it will retract and leave the end of the vessel clean for suturing. None of the adventitia must be allowed to come between the sutures as it will result in the deposition of fibrin and the formation of a thrombus.

I would like to mention two cases of blood vessel suturing which have recently been reported in the literature. The femoral artery was not among the vessels operated on, but the principles are the same. In the October number of the *Annals of Surgery* is a case reported by Dr. Sherrill of Louisville, Kentucky. It was a backward dislocation of the elbow accompanied by considerable swelling of the forearm and there was no pulse in the radial artery. A rupture of the brachial artery was suspected and even though the arm was immersed in hot water the collateral circulation was not established at the end of three hours. The surgeon, therefore, concluded that the patient would lose his arm unless a suture of the artery could be made. Incision was made to the wounded vessel which was found completely divided and the ends filled with blood clot. He reduced the dislocation and sutured the artery and the circulation in the arm was gradually restored.

There was another case recently reported by Danielson of Germany which is of great importance because it opens a new field for the surgery of the blood vessels. Hitherto it has been supposed that the operation had to be done under aseptic conditions in order to prevent the much dreaded thrombosis with metastasis when operating in the presence of infection. Danielson, however, operated in the presence of infection and obtained a good result. The case was one of a stab wound of the axillary artery. The attending physician applied a tourniquet around the shoulder and sent the patient to a surgical clinic in another town, without having dressed the wound. It was five hours after the accident before the patient arrived at the hospital. The arm was cold and no pulse could be felt in the radial artery. Upon loosening the tourniquet the blood spurted out of the artery in a stream so that it was necessary to reapply the tourniquet. The surgeon then sutured the artery. The wound was drained because of the possible presence of infection. The next day the pulse could be felt in the radial artery. There was a high fever and a free discharge of pus from the wound which gradually healed by granulation. In this case there was no formation of a thrombus. That the results in this case were not due to the gradual formation of a thrombus and the establishment of the collateral circulation is proven, in this surgeon's opinion, by the fact that a pulse in the radial artery could be felt soon after the suture and continued afterwards. It thus appears that we can suture blood vessels with safety even in the presence of infection.

REPORT ON THE DEPARTMENT OF
ROENTGENOLOGY, UNIVERSITY
HOSPITAL, ANN ARBOR,
MICHIGAN.

JAMES G. VAN ZWALUWENBURG, M.D.

Clinical Professor of Roentgenology, University of Michigan.

I have been asked to report on the progress in the Department of Roentgenology. Having visited the place you are all familiar with the progress made in the matter of equipment and all have opinions concerning the character of the work we are doing. We prefer to let it speak for itself.

Progress is a relative matter and implies a starting point and a goal. We started where progress left off in 1906. For that time we had a good equipment. It was not extensive, but its quality and efficiency were good and adequate for radiography as it was then practiced. From that time, until June, 1913, progress was retrograde, both in the character of the work, and in the physical condition of the equipment. Repairs had been woefully neglected, and some valuable apparatus had thereby fallen into disuse.

In the mean time, the practice of roentgenology had made remarkable strides. This is partly due to a better understanding of the physical principles underlying the application of the X-ray, and partly to the improvement in apparatus. Seven years ago, the radiographer was limited by the shortcomings of his generators. This is no longer true. At the risk of being too technical allow me to explain.

The X-ray tube has distinct polarity and requires an unidirectional current. Its resistance is very great and it requires a voltage of from 35,000 to 90,000 volts to excite it. The X light given off is a small fraction of the energy supplied to the tube, and relatively large currents are required for picture taking. It has lately been found that the penetration of the X light depends solely on the voltage maintained at the terminals while the volume of rays given off is a direct function of the current. The product of the voltage and the current measures the power consumed.

The static machine gives a perfectly unidirectional current, but its power is limited by the fragility of the material from which it is constructed. Their efficiency is further reduced by their unreliability under varying atmospheric conditions.

The X-ray coil produces an alternating current. In one direction the impulse is of high potential, and low ampereage, in the opposite direction it is of low voltage and relatively high ampereage. The problem of suppressing the latter current is a very vexing one, which has never been satisfactorily solved. The "inverse current" has until recently been the roentgen-

ologist's incubus. The coils themselves can be made in large sizes, but the output is strictly limited by the capacity of the interrupters, which are necessary with them.

The interrupterless transformer of today supplies an absolutely unidirectional current and can be built in large sizes. Twenty horsepower machines have been placed on the market. No tube at present made will carry a load of such magnitude and six to ten horsepower appears to be our present working limit. With the interrupterless transformer we have an adequate supply of suitable current and we are placed in the position of being limited only by the capacity of the tube.

Two great obstacles to an extension of the radiographic field were everywhere recognized, the lack of sufficient power and the unfortunate necessity of using penetrating rays. Power means speed and shortened exposures. In 1903, when one and two minute exposures were the rules in a search for renal calculus it was admitted that only from five to seven per cent. were demonstrated on the plates. Today with half-second exposures an operator is dissatisfied with an average below 95 per cent. The explanation lies in the fact that movement of the calculus, respiratory and otherwise, is practically nil during so short an exposure, whereas with the old technic, its shadow was spread over considerable area and became lost. The principle is of course the same as that in photography where a long time exposure of a fairly busy street will give a picture free from either pedestrians or vehicles, while a "snap shot" will show them all in sharp detail. Radiography of the stomach and intestines were impossible, because the peristaltic movement could not be controlled. Intensifying screens were introduced some six or seven years ago, and were soon regarded as necessities. The early screens reduced the time of exposure to about one-fourth and they have since been improved to about twice that efficiency.

Less penetrating rays were very essential because they give vastly greater contrast in the radiogram. They make certain the demonstration of relatively permeable calculi and make possible a certain amount of soft tissue differentiated. Unfortunately, soft rays require greater volume, involve more inverse, more heating of tubes, and longer exposures. Between these alternatives the more penetrating rays were found more certain and more economical.

The introduction of the transformer has solved most of our difficulties. It delivers an absolutely unidirectional current and can be built in any size units. It employs a form of current that allows of exact mathematical calculation and design. We are no longer limited

by our generators, but by the capacities of our tubes.

By the addition to our equipment of a 10 kilowatt transformer, several of the best intensifying screens and modern convenient accessories, we are in a position to undertake the work in any field which is now open to the radiologist and we only need greater skill in plate making, and better judgment in their interpretation to keep abreast of the procession in the diagnostic line.

To be sure, some of our devices are home made makeshifts, and a more liberal equipment would mean greater economy in labor and material, but we have the essentials, and a wider field is already open. Gastroenterologic examination with bismuth "per os" and "per anum" offers a wide field. So far the harvest has not been very great, but much good is bound to come from its careful and judicious tillage. Not only may the diagnosis of gastrocarcinoma be made with certainty in the vast majority of cases, but its position and extent may be more accurately gauged than by clinical methods. The differentiation of gastric and duodenal ulcers from other confusing conditions, is becoming more and more certain. Collargol injections of the urinary tract give valuable information in many conditions besides pyelonephritis, for example, tuberculosis, hypernephroma and certain anomalies. The greater contrast at our command makes possible greater detail in the cellular bones, in head work, and in the study of the mastoid and accessory sinuses. Periarticular structure can be fairly well demonstrated. Small differences in the density of the lung tissue are more certainly demonstrable.

But radiography is still largely an art, a matter of skill. We are still unable to measure and control our conditions so that results are infallible. Two recent inventions seem to promise just that. It seems probable that we shall be able to turn on just the shade of light, of just the candle power and for just the length of time that we wish. The first is the Cabot high tension direct current generator, which produces a ray of uniform penetration and therefore furnishes a theoretically ideal current for X-ray work, and the second the "adjustable penetration tube." Both are in the experimental stage, and soon to be put on the market. Already they have contributed a great deal to our knowledge of the physical laws underlying the generation and the properties of X-ray. Both are correct in principle and are bound to find their way into the best practice.

Another field with great promise for the future is that of radiotherapy. We owe to the scientific investigation of radium and the allied bodies a wealth of new knowledge concern-

ing the nature and action of the X-light. During the last two years, an entire revolution has taken place in the technic and in the field of radiotherapy. Instead of the soft ray, for superficial lesions, the Freiberg technic now uses the hardest ray at its disposal for all conditions and a dose fairly accurately controlled by the use of a chemical indicator. It is now possible to gauge the dose to one-eighth of the quantity required to produce an X-ray burn. In practice three-fourths of seven-eighths of an erythema dose is given at a sitting and the dose is not repeated until the effects of the previous dose has worn off, usually from ten to fourteen days. The rays are carefully screened to absorb and remove all the soft rays before they reach the body. Deep lying lesions are approached from numerous directions by the "cross-fire" method. The results have been truly remarkable. Inoperable carcinoma of the uterus has disappeared without recurrence for one and one-half years. What the ultimate result will be the future only can tell. Carcinoma of the breast and stomach improve in many cases. Some are apparently cured. The field of gynecology has been invaded. Metrorrhagia is promptly controlled. Fibroids shrink in volume and cease to give trouble, pelvic adhesions are said to be absorbed. The literature is full of these subjects. The dermatologist is no longer the only specialist to use the X-ray with confidence and he uses it with far greater confidence and certainty of results than ever before.

Unfortunately, the whole issue has been seriously clouded by the coincident use of radium, mesothorium and similar bodies. The useful radiance of mesothorium has approximately eighty times the penetration of the hardest x-ray at present possible, but otherwise differs little in physical or physiologic properties. Hence we can easily understand the craze for hard and still harder rays. Improved apparatus and improved technic are certain to result to the great advantage of otherwise hopeless humanity.

I have tried to show our point of departure in the march of progress, our present position, and the ground we have covered, and if not the ultimate goal, at least the next mile post.

Radiography has been unscientific through ignorance, and has been the victim of exploitation by quacks and charlatans until it has lost caste with the older and more respectable branches of medicine. With more accurate knowledge of the forces handled and a more judicious selection of the tasks assumed, it will ultimately earn and receive a respect it has not hitherto deserved.

Inasmuch as the funds at the disposal of the Department for new equipment, and repairs will depend in no small measure upon the vol-

ume of business transacted by the Department, this feature becomes of some interest. It gives us pleasure to make the following comparisons:

In the calendar year 1911, 609 plates were exposed, with a gross receipt of \$1,064.27. In the year 1912, 830 plates were made, with an income of \$1,369.00. Since July first and including the whole of November, we have seen approximately 475 patients and 831 plates have been made with a net receipt of \$1,220.90. In other words, in the past five months we have equalled the number of plates for the whole of the previous year, and have taken in slightly less money. For the greater part of that period, our equipment was still incompletely installed, and several lines of work we are now ready to undertake were not open to us. As our technic becomes more perfect, and we acquire new accessions to our equipment, our efficiency should further increase and the field widen.

Our motto is "We aim to serve" and to that end, we have introduced several innovations. We are keeping a four part cross index, which is at the disposal of any one connected with the Hospital. We can lay our hands on any desired plate in a very few minutes, or tell where the plate has gone if it has been borrowed. We have undertaken to give an unsolicited opinion on all cases referred to us for examination. We do not expect you to respect these opinions if they do not deserve respect, but we are not afraid to go on record, and ultimately hope to make them of real value.

We still stand in need of a number of important pieces of apparatus. We need more convenient rooms. Perhaps our greatest need is for a dressing-room with toilet. It is next to impossible to do colonic work without it. We need better and more economical apparatus for our photographic work. With the increase in the volume of cases needing treatment which present results seem to promise, we shall need more and specially devised equipment for this purpose alone. And if the work continues to increase as it has for the past few months, we shall certainly need more assistants.

We keenly realize our obligations to you for your co-operation. With your help we feel sure we can once more put the University of Michigan on the radiographic map where it belongs.

REPORT OF TWO CASES OF RICKETS SIMULATING LUES.

D. MURRAY COWIE, M.D.

Clinical Professor of Pediatrics and Internal Medicine,
University of Michigan.

(From the Pediatric Clinic, University Hospital, Ann Arbor, Michigan.)

The two patients I wish to present tonight are sisters, seven and five years old respectively.

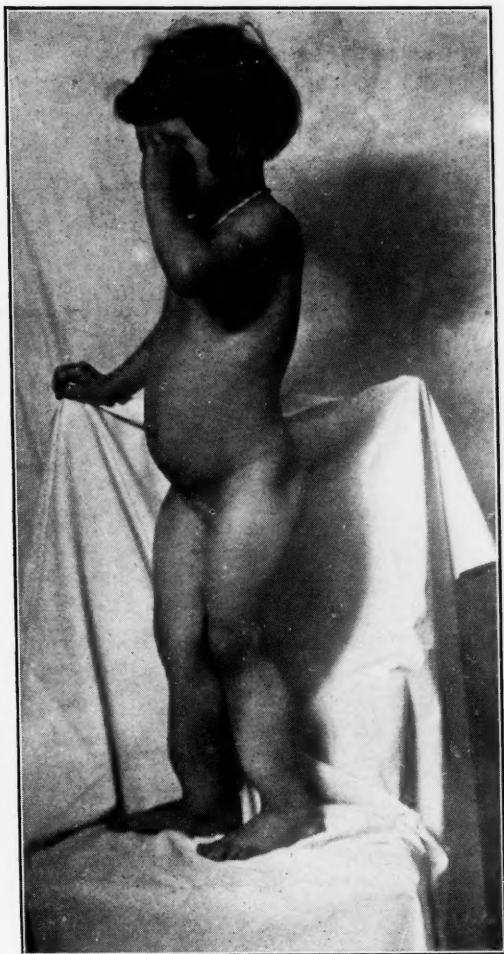
Both have marked deformities of the lower extremities, and the younger marked lumbar scoliosis. The general picture leaves no doubt but that both of these children have well marked cases of rickets. The deformed lower extremities, anterior bowing of the thighs, knocked knees, distortion of the tibiae, rosary, enlarged wrist joints, pot belly and the age at which the deformity began (time of walking) all speak for this disease. There are two points in each case which suggest the possibility of hereditary lues, namely—the marked



appearance of a saber shin and the scaphoid scapulae. The latter we not infrequently find in the Clinic and regard it simply as a stigmata of degeneration. The saber shin on the other hand is so characteristic of lues that we never can pass it by lightly. When we closely examine the older child we observe that in addition to the anterior bowing of the tibiae, there is a twisting of the bone to the inner side above the anterior bowing. This is not characteristic of a typical saber shin as may be seen in a typical case of hereditary lues in the Dermatologic Clinic. There are no other signs of hereditary lues in these children.

From the etiologic side we find some points

of interest. The older child was breast fed and seemed to develop well until she began to walk. Rickets is rare under these conditions. The younger child was fed on Mellin's, Eskay's food and crackers. This suggests a possible etiologic factor, but the mother says that the



milk she used was good milk. None of the early signs of rickets, such as head sweating, etc., were observed by the parents. The mother has had marked interstitial keratitis in both eyes for nineteen years. This developed about one year after marriage. The father gives no history of an initial lesion. There have been no miscarriages. One brother nineteen years

old had knocked knees, but this is not noticeable at the present time. One sister fourteen years old is perfectly developed, but has slightly scaphoid scapulae. Wassermann reactions on father, mother and both children have been entirely negative.

The general deformities and bone changes are not characteristic of lues but the association of the two diseases is strongly suggested. The clinical evidence thus far, even in view of keratitis in the mother, which as I believe has been considered somewhat atypical by Dr. Wile and Dr. Parker, rather points to uncomplicated rickets.

DISCUSSION.

DR. UDO J. WILE: Dr. Cowie kindly asked me to see these two children with him and I must say that my first impression was that both were examples of syphilis. On closer examination, however, and upon more mature study we found that the changes were probably not those of syphilis. The bowing of the tibiae anteriorly suggests syphilis it is true, but there is marked lateral deviation which is not found in syphilitic bones, which are not soft. These are essentially soft bones and mechanical factors have certainly been at work in producing these changes. Not only are the tibiae bowed in this way but the other leg bones are also malformed, particularly those of the thigh. The occurrence of interstitial keratitis in the mother also suggests that the change was syphilitic but the interstitial keratitis is not essentially of the type that one finds in syphilis. Dr. Slocum has expressed the opinion that the change could easily be from any one of a number of other causes. The Wassermann reaction on the father, mother and two children is negative. However, this should be regarded with reservation as speaking against syphilis because we have found occasionally that the mother of syphilitic infants frequently becomes negative during pregnancy. These cases are instructive in that one may have a condition simulating "tibia en lames de sabres" other than occurs in hereditary syphilis.

DR. DAVID M. COWIE, (closing the discussion): I have nothing further to add except to point out again that the majority of symptoms and signs in these cases are in favor of the diagnosis of rickets. The two diseases might easily be associated, and it will be of interest to study them further.

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JANUARY.

Editorials

SEMI-ANNUAL MEETING OF THE COUNCIL.

The semi-annual meeting of the Council of the Michigan State Medical Society will be held in the parlor of the Wayne County Medical Society's building, 33 E. High St., Detroit, on Tuesday, January 20th, 1914, at 10 o'clock in the morning for the transaction of the regular order of business and such other business as may properly come before that body.

W. T. DODGE, Chairman.

F. C. WARNSHUIS, Secretary.

DUES

The dues for 1914 are now due and payable. Please do not neglect this but make it a point to send your check to your county secretary at once. He has enough work to do without being compelled to assume the role of collector and persistently request you to pay your dues during the next three months. When you receive notice that your lodge dues are payable you usually remit a check to cover at once. Why

not do the same thing in this matter of your medical society dues? Your county secretary will appreciate your prompt remittance. Please do so at once.

TREATMENT OF PNEUMONIA.

Some very interesting articles have been recently published relating to the treatment of pneumonia and the subject is still occupying the earnest attention of investigators, the result of which will no doubt give, in the near future, a much clearer understanding of the intricate phenomena of the disease. The investigators have been basing their studies of the disease upon the conception that a specific therapy is not possible without a clear understanding of the changes, chemical and biological, which take place during the course of an attack; and they have therefore directed most of their efforts toward the solution of the mode of operation of the pneumococcus in its attack and of the means of resistance of the host, leaving the therapeutic side of the disease to follow the result of their investigations.

Most of the newer contributions admit the contagiousness of the disease, either by the direct or indirect method, though many believe contagion is comparatively infrequent, much depending upon the verulence of the organism and the resistance of the individual.

Very little advance has been made in the drug treatment of pneumonia in the past decade. Morgenworth, working along chemotherapy lines in pneumonia, has endeavored to solve the problem and has given us, through his animal and chemical experiments, a quinine compound as a supposed specific which has proved to have some untoward affect in man, and though the conclusions reached have not been satisfactory, nevertheless these experiments are pointing a way to a better understanding of the disease. Many drugs have been exploited, some of them by the most eminent clinicians, as a cure for pneumonia, and have each had their day, but ignorance of the mode of action of these drugs must be held responsible for their laudation. Rosenow, Herschfelder and others have demonstrated that ferments play an important role in the protection against the pneumococcus, and in curing an attack once started. With these methods of attacking the problem it is not unlikely that we are on the threshold of a specific therapy in drug or serum.

Pneumonia in childhood is liable to so many severe and fatal complications, it would appear that with our present knowledge of the disease the time had come when more attention should be paid to the prevention of it. It is not too much to say that one of the most important problems before the medical profession at pres-

ent is the reduction of the death rate from pneumonia, especially among children, and the only hopeful outlook for any considerable reduction in the mortality is through the prevention of the disease. Since the pneumococcus is for the present beyond our reach, the predisposing should claim our attention because they are measurably under our control. Pneumonia is favored by lack of sunlight, it occurs among those who are much exposed to dust, and those who have to breath the emanations from the lungs of other people. Thus the control of pneumonia will be more hopeful in the future through the solving of the housing problem, less crowding of living and sleeping apartments, improved public and private hygienic conditions, and more suburban life among the poor; thus preventing the development of the disease by lessening the predisposition.

A. D. HOLMES.

THE MODERN PROCTOLOGIST AND HIS SPECIALTY.

The time was not so very long ago when the proctologist was known principally, to the profession and laity alike, as one who treated diseases of the rectum and anus only. He was supposed to limit his studies, his training and his knowledge to the terminal five or six inches of the large bowel, and to practice his profession below the "dead line"—the pelvic peritoneum. He was a skilled specialist, peradventure, in the treatment of "piles" and "fistulae", but in the eyes of the medical world in general, his activities stopped and did not extend beyond these two conditions.

As a matter of fact the special branch of medical science known as proctology is more specifically the science of entero-proctology, covering as it does the study of the entire intestinal tract. The field of the proctologist is no more limited to the rectum and anus alone than is that of the laryngologist limited alone to the larynx, or that of the urologist limited to the urethra. A specialist who is competent to treat diseases of a part of the intestinal tract must be competent to treat pathological conditions of the entire intestinal tract. How ridiculous a specialist would seem if he announced that: "Below the recti-sigmoidal juncture I am specially skilled; above it I am absolutely incompetent!"

To become a well trained, thoroughly grounded proctologist, one must first serve his apprenticeship in general practice; then he must have had experience in general surgery and particularly in surgery of the abdomen and pelvis; he must also be familiar with the normal and abnormal physiology of the organs of digestion, assimilation and elimination.

The problems presented by pathological in-

terference with normal intestinal elimination, whether mechanical or functional, involve the study, diagnosis and treatment of many factors which either accelerate or impede intestinal peristalsis. The so-called chronic "diarrhoea" and "constipation" are successfully treated by the proctologist who has given careful consideration to all the factors in the whole intestinal tract. Ulcerative conditions, infections, neoplasms, adhesions, misplacements, obstruction of the bowels and its related structures, can only be successfully treated by him who is competent to perform every intra-abdominal operation that may be indicated for the relief of the existing condition.

The proctologist who has developed himself to that high ideal of his professional specialty—a skilled intestinal surgeon—is one who can give to his patient requiring an intestinal anastomosis, a resection, extirpation of a colonic or rectal carcinoma, the excision of a rectal fistula, the benefit of a skill and technic obtainable only by constant contact and professional labor with those suffering from the diseases requiring operative relief of the kind about mentioned.

LOUIS J. HIRSCHMAN.

PRESENT STATUS OF TREATMENT OF SCOLIOSIS.

Since the days of Hippocrates, the treatment of crooked backs has been an ever present and very prominent problem with the medical profession. All through history the hunchback has been a great sufferer and the target for thoughtless ridicule. Practically without exception this great class of cripples have been the victims of tuberculosis of the spine, or of so-called idiopathic lateral curvature (scoliosis). For many years, when taken at its inception, tuberculosis of the spine has been fairly amenable to treatment. On the other hand, scoliosis has been, and still is, most difficult to care for. Every conceivable device, from stretching by means of two horses, one attached to the head and the other to the feet, to the most complicated ingenious machinery, has been employed. The total net result has been an occasional slight improvement in deformity, and frequently the prevention of its further development.

The principal mistakes in treatment have been due to lack of knowledge of the etiology, morbid anatomy and mechanical changes of this disease. Even today the etiology is unknown except in those cases where loss of muscle balance, due to anterior poliomyelitis, has led to the deformity. Various theories have strong advocates: Faulty posture leading to permanent anatomical changes; bone disease

leading to unequal development of the two sides; bone softening, and many others. The morbid anatomy and mechanical changes have of late years been pretty thoroughly worked out through the researches of Lovett, Bradford, Freiberg and others; we now have a clear notion of the conditions which we are attempting to treat.

Scoliosis depends not on a simple bending of the spine but on a bending in both the transverse and antero-posterior planes, to which is added a rotation of the spine on its axis. Since the realization of these facts, the efforts of orthopedic surgeons have been devoted primarily to the reduction of the rotation of the spine; for it has been found experimentally that a spine cannot bend laterally without rotating, and, conversely, that the rotation cannot be overcome without overcoming the bending. In the past practically all attempts to overcome rotation have been made with the spine in extension; that is, with all the articulating facets firmly locked together. As a result comparatively little has been accomplished and the scoliotic patient has rarely been improved. Within the last three years several men, notably Abbot of Portland, Maine, and Forbes of Montreal, have conceived the idea of making forcible correction with the spine in flexion. This has opened the articulations and made the spine as a whole much more flexible. Each man has worked along different lines in the application of this principle, and each has developed a more or less complicated but extremely useful method of untwisting the deformity.

However, none of the methods so far evolved have produced perfect results. Many cases of bad deformity with actual bone change still defy our best efforts to actually correct them. Nevertheless it may fairly be said that through the application of this principle of flexion of the spine during forcible correction of the deformity, we have added to our armamentarium an extremely valuable weapon with which to combat the disease, and many cases can be so much improved, if not absolutely cured, that they are enabled to face the world without apparent deformity and with a greatly increased chance to become useful members of society.

F. C. KIDNER.

THE ENFORCEMENT OF OUR MEDICAL LAW.

The new medical practice act that was passed by the last legislature and now in force is a measure that will enable the authorities to rid the state of all illegal practitioners, charlatans, representatives of various cults and fakers who are carrying on their nefarious practices in violation of this law. It is the first time that we have had a law that defines the practice of med-

icine and with the existence of a legal definition of what is meant by the practice of medicine the determining of the guilt of an accused person is more readily accomplished.

The law is, however, valueless unless its provisions are enforced and its violators prosecuted. We regret exceedingly that there is no provision for a prosecuting officer whose entire time might be devoted to the enforcing of this act throughout our state. In this connection we are reminded of the following extract from the address of Hon. M. D. Campbell, delivered at our annual meeting in Flint:

"Never since the call of Adam 'Where art thou' has there been a time when social, health and sumptuary laws did not require a policeman in the garden. We may pass resolutions and legislatures may enact laws until the crack of doom, and unless officers are appointed to enforce them, they will sleep without waking."

Notwithstanding, however, this law must be enforced—it is a duty we owe to the public and to ourselves. In the absence of a prosecuting officer designated to that task we believe that it is incumbent upon the organized profession to take up the task.

How shall it be done? By the appointment of a committee in every County Medical Society whose duty it shall be to ascertain who are the violators in their county, place this information before the county prosecutor and swear to the warrant not as individuals but as representatives of the county society. Such committees by active effort will bring about the rigid enforcement of the provisions of this law and thus rid the state of its violators.

Individual work, commendable as it may be, will not accomplish as much as organized effort and action. Individually we are prone to shirk responsibility and say—"Oh, he isn't hurting anyone." Again, if a citizen approaches you and asks you why you are after "Dr.(?) Faker" you might be persuaded by him to withdraw your complaint. By conducting the enforcement of the law by the suggested plan you can reply to the interested citizen that the complaint is made by the county society and the responsibility does not rest upon your shoulders alone. Again, demands from the organized society of the county composed of the representative physicians in the county will cause a prosecuting attorney to move to quicker action than if he were approached by one or two individuals. Other reasons might be advanced as to why it is advisable that the work should be undertaken by the county society.

We suggest that at your next meeting you take such steps as are necessary to secure the appointment of such a committee and having secured their appointment charge them to become immediately active. Two or three societies have already done so and it is urged that

the movement become widespread throughout the state. The State Board of Registration we feel sure will be pleased to render you all the co-operation in their power and supply you with sought for information.

DOES THE WORKMEN'S COMPENSATION LAW CHANGE THE OLD TIME RELATIONS BETWEEN THE PHYSICIAN AND HIS PATIENT?

Herein is some food for thought. Since the days of Hippocrates the physician has held as a sacred secret all knowledge of his patient's physical conditions, and other confidences reposed when such knowledge was imparted by the patient to the physician as such. The patient's most carefully guarded closet skeletons are often laid bare to the physician, either in confidence reposed by the patient in consultation or discovered by the physician during a physical examination or a course of treatment given the patient. The whole duty of the physician was to his patient in whose employ the physician might be said to be. The Workmen's Compensation Act practically places the physician in the employ of the industrial corporation or firm who is to bear the expense of the patient's treatment. That the physician or surgeon shall ever and always do all in his power to effect a speedy cure remains a paramount duty as it has always been.

Many instances may arise wherein the physician's path of duty may not be so clearly defined regarding the absolute fealty to his patient, and to his employer, when these are not one and the same. An actual instance, or two, of this kind will bring out this point more clearly:

Case 1. The patient was a young man working upon the steel construction of a new building. When driving home a large rivet, by means of a steel hammer, a piece of metal struck him in the right eye. The firm which employed him sent him to me for treatment. The injury caused irritation of the right eye to such an extent that it was necessary to put the eye under atropin and cover it with an eye patch dressing. Following my rule of always taking and recording the patient's vision in each eye before any treatment is given I found that vision in the right or injured eye was 20/30. Vision in the left or uninjured eye 20/70. He told me in confidence that he had never been able to see well with his left eye, but his employer did not know it. As far as the injury to the right eye was concerned he could have gone back to his work within a few hours after the injury, by simply keeping the injured eye covered by the protective patch

dressing and using the left or uninjured eye for his work.

In this instance, however, the man had to stop work for several days until the injured eye had entirely recovered; as the vision in the uninjured eye was so poor that I did not dare permit him to go back to his work. The vision with the uninjured eye was so poor that he would have fallen in attempting to climb about the steel construction work, and would have brought further disaster upon himself and upon his employer.

Now here was several days' time which was lost to his employer and for which his employer paid compensation, due not entirely to the injury, but due to the fact that this man only had one good eye when he was employed.

What is the physician's duty in such an instance? The employer wants to know whether or not anything besides the injury contributed to the disability. The patient does not want his employer to know that he has only one good eye. Is it my duty to protect my employer or my patient?

Case 2. A factory machinist has a slight injury to one eye. The company employing him sent him to me for treatment. The eye stubbornly refused to get well under the usual treatment, and upon inquiry into the patient's history he admitted that he had syphilis some time before. Under appropriate internal treatment added to the local treatment recovery was uneventful but retarded.

Now, unquestionably, the syphilis delayed recovery in this instance, and was the cause of considerable financial loss to this man's employer, both in extended loss of time, for which the employer had to pay compensation, and also in larger physician's fees for care of the case.

This patient did not want his employer to know that he had syphilis. But the employer, who paid me for the medical care of the patient, had a right to know why the bill was so high and disability of so long duration, following so slight an injury. In justice to myself I should be permitted to explain to the employer who paid me for taking care of this case, why it took me so long to cure an eye so slightly injured.

In this case my duty to my patient was to keep his secret. My duty to my employer was to inform him as to what he paid out his money for; and, lastly, my duty to myself was to explain to my employer why my cure was retarded and high priced.

These are only two instances which illustrate some of the points involved in this question. I could cite more cases of this same nature and also some of different nature which bring out even more and different points involved.

In my opinion this condition of affairs under the present Workmen's Compensation Law will

eventually cause every employer to demand a complete physical examination, and a physician's certificate covering a complete physical examination of every applicant for work before he employs him. This will especially be true of all the large factories where great numbers of men are employed, and these industrial corporations will employ their own physicians to make these physical examinations and keep accurate records of them.

This will in turn work a hardship upon the man who is not physically perfect. The man with the poor vision, poor hearing, or other physical defects will find it more and more difficult to obtain employment; just as he now finds it difficult to obtain life insurance. The further result will be that the commonwealth will have more and more demands for help from the common people.

On the other hand these conditions may do more than anything else could possibly do to awaken the people to the necessity of the right way of living and the conservation of good health.

V. A. CHAPMAN.

[The above article was submitted to Dunham and Dunham, Attorneys, Grand Rapids, and the following legal opinion is submitted by H. Monroe Dunham of the above law firm.]

MEMORANDUM.

The confidential relationship existing between physician and patient was established by the Statutes of Michigan, as far back as 1857, which was subsequently amended by the laws of 1871, and which Act is now in force, and provides as follows:

"No person duly authorized to practice physic or surgery shall be allowed to disclose any information which he may have acquired in attending any patient in his professional character and which information was necessary to enable him to prescribe for such patient as a physician or to do any act for him as a surgeon."

At the common law, information given by a physician or surgeon while in attendance upon his patient was not privileged. The purpose of this statute was to throw around such disclosures, as the patient is bound to make for the information of his attending physician, the cloak of secrecy and the prime object of the Act was to invite confidence in respect to ailments of a secret nature and the spirit of the Act would not include a case where the infirmity was apparent to every one on inspection. In practice, however, the statute has not been so limited in construction for the reason that the word of the Act was broad enough to include any information necessary to enable the physician to prescribe or the surgeon to act.

There has been no amendment to this statute in Michigan up to the present time, but Act

No. 10 of the Public Acts of 1912, Extra Session, which Act is known as the Michigan Compensation Act, changes to a certain extent under certain conditions, the relationship of physician and patient.

Under the Compensation Act as provided by Section 4, of Part 2 of said Act the employer shall furnish or cause to be furnished reasonable medical and hospital service and medicines when they are needed during the first three weeks after the injury.

By this enactment, the statute imposes a duty upon the employer, requiring him to provide reasonable medical services and medicines, but which obligation does in no way change the confidential relationship heretofore existing between the physician and his patient. By reason of this contractual relationship, existing between the employer and the physician, which relationship is established by statutes, does not abolish the privileged and confidential relations between physician and patient and in no way is the physician morally or otherwise bound to inform the employer of the condition of the patient, which information the physician has obtained in his professional capacity, and which information is at the present time as much privileged and of a confidential nature as it was prior to the above mentioned enactment.

Under the terms of the same Act, Section 19, part 2, the Act provides as follows:

"That after an employe has given notice of an injury, as provided by this act and from time to time thereafter, during the continuance of his disability he shall, if so requested by the employer, or the insurance company, carrying such risk or the commissioner of insurance, as the case may be, submit himself to an examination by a physician or surgeon authorized to practice medicine under the laws of the state, furnished and paid for by the employer, or the insurance company, carrying such risk or the Commissioner of Insurance, as the case may be. The employe shall have the right to have a physician provided and paid for by himself present at the examination. If he refuses to submit himself for the examination or in any way obstructs the same, his right to compensation shall be suspended and his compensation during the period of suspension may be forfeited. Any physician who shall make or be present at any such examination may be required to testify under oath as to the results thereof."

By this Section the Legislature seemed to recognize the confidential relationship existing between patient and physician and to understand that the provisions of Section 4, of Part 2, did in no way alter the confidential relationship of patient and physician.

So by this Section 19, or part 2, the Legislature provided a way by which the employer, or the insurance commissioner could obtain information that is privileged and which they were unable to obtain legally, by any other process.

This section provides that the employer or

the insurance company, carrying such risk or the commissioner of insurance, as the case may be, may request the injured employee to submit himself to an examination by a physician or a surgeon furnished and paid for by the employer, insurance company or commissioner of insurance under a penalty of a suspension of his compensation under this Act, and that the information obtained at this examination, so demanded, as provided by this Act, may be imparted to them, the employer, insurance company or commissioner of insurance as this Act also provides, that any physician present at such examination may be required to testify under oath as to the results of such examination.

By this statute, under certain conditions and provisions, the confidential relationship of patient and physician are changed and the physician would be bound to testify to things learned by him at such examination, but not to things that he knew or learned concerning the patient prior to such examination, providing these things were not discovered during the examination.

This Act changes to a considerable extent the law of the state of Michigan as laid down in the case recently tried in the Circuit Court for Kent County, which case was that of *Thomas vs. The Township of Byron*, in which case the Supreme Court said in substance: That any physician or surgeon, who had attended the deceased in her life time, in his professional capacity and then after her decease had been present at an autopsy held on her body, that the physician could not testify as to things learned by him at the autopsy or post-mortem examination of the deceased, for they did not believe that a physician could separate the information obtained by him from the patient in her life time from that which was learned by them at the post-mortem.

By Section 19, of Part 2, the statute seems to provide that the attending physician could be required to testify under oath as to things learned at the examination of the patient, also though such information might have been gained in his professional capacity in attending the patient, prior to the examination.

In summing up the law, as it now appears in regard to the legal status of physician and patient, we are of the opinion that the confidential relationship existing between physician and patient is not altered or changed in any way by reason of the Workmen's Compensation Act, so-called, until the employer or insurance company or the commissioner of insurance demand an examination of the patient and such examination is held by a physician employed by one of the parties, demanding such examination, and up to that time any communication or information learned by a physician in prescribing

for his patient would be privileged and it would be in violation of the law, for a physician, although employed by the employer to disclose to the employer anything learned by him in prescribing for the patient up to the time that the examination is demanded and had, as provided in Section 19, Part 2 of the Workmen's Compensation Act.

Taking up the two questions submitted:

The first question, in which it states that a patient received an injury to his eye while working for an employer who had elected to be bound by the terms of the Compensation Act, and upon receiving the injury, the employee was sent to a physician employed by the employer for treatment. That the vision in the injured eye was 20/30ths and in the uninjured eye 20/70ths as disclosed by the examination of the patient.

The physician learns in confidence that the patient has not had the full use of his uninjured eye for some time, all of which was unknown to the employer. That after dressing injured eye it would have been possible for the patient to have returned to work, providing the uninjured eye had a normal vision and that by reason of the uninjured eye and the poor vision of the same, the patient was unable to work for several days, and that by reason of the condition of the uninjured eye, the employer would be obliged to pay compensation, which was not due entirely to the injury but due to the fact that the patient had but one good eye at the time of his employment.

The question asked is:

1. What is a physician's duty in such an instance, upon the request of the employer, as to whether or not anything else contributed to the disability, and,
2. Is it the duty of the physician to protect the employer or the patient?

The facts in this case as the question is presented are not sufficient, as the case stands, for the employer to pay any compensation at all, as it will be necessary for the employee to be disabled on account of his injury for one full week before he is entitled to any compensation whatever, and until he has been disabled for eight weeks, he is not entitled to any compensation for the first week.

Now, then, the first question in our opinion: It would be a breach of duty for the physician to impart to the employer any information given to the physician in confidence, to be used by him in prescribing and treating the injury of the patient. This would be the rule in the hypothetical case, stated, up to the time that the employer demanded an examination to be made of the patient as provided in Section 19, Part 2 of said Act.

In answer to the second question: The physician is legally bound to retain all information

learned by him in confidence in prescribing for his patient and it would be a breach of duty for him to impart that information to the employer for the employer's protection, as the statute provides protection for the employer, and until he exercises that right, there is no duty on the part of the physician to inform the employer.

The second hypothetical case is one in which an employee was injured in one eye, which injury stubbornly refused to yield to treatment and upon inquiry the physician learned from the patient, that the patient had had syphilis for some time. That this condition delayed recovery and was the cause of considerable financial loss to the employer on account of the disability of the employee and of the payment of compensation on the part of the employer.

The first question is: Was it the duty of the physician to explain to the employer why the disability was of such duration, in view of the fact that the employer was providing for the medical care of the patient, and

Second: Should not the physician be allowed to explain to the employer, for the physician's protection, why the cure was of such long duration?

In our opinion in answer to the first question: It was not the physician's duty to inform the employer of the cause of the delay in the cure and it would have been a breach of duty on the part of the physician to have informed the employer of the condition, found in the patient, which condition was learned by physician in confidence and in prescribing treatment for the patient. That the fact that the employer paid the physician for the medical treatment would not give to the employer any other right than he would have, if the patient himself was providing for his own medical attendance for the reason that under the statute the law obligates the employer to provide three weeks' medical attendance upon an injured patient and no duty whatever arises from that statute between the employer and the physician and as had been stated before, the employer must seek his rights in the Act by demanding an examination before he is entitled to learn of the condition of the patient and that until he does so, the physician owes no duty whatever to the employer.

In answer to the second question: From a legal standpoint, the physician would be acting outside of his professional duty, if for his own protection, he violated the confidence reposed in him by the patient and which confidence is protected by the statutes. It would be entirely unethical and unprofessional for a physician to give any information to the employer in violation of the law, for the purpose of protecting himself.

The relationship between employer and

employee is that of contract. The employer contracts with the employee to do certain work and that contract does not entitle the employer to know or learn of the physical disabilities of any man employed by him, whether the physical defects are apparent or not.

We have no knowledge or record of the number of cases, such as referred to in the doctor's communication, but it is our opinion that the percentage of cases in which physical defects of employees, rather than the injury sustained by them, causing disability would be very small, and that on account of this situation, it seems to us that the condition which the doctor mentions in respect to the physical examination and the keeping of records of all men employed by industrial corporations will never be practised.

H. M. DUNHAM.

Editorial Comments

"Resolved, That any member of the Michigan State Medical Society found guilty of secret fee-splitting or of giving or receiving commissions shall cease to be a member of the Michigan State Medical Society."—*Action taken by the House of Delegates Sept. 5th, 1913.*

"The Board of Registration in Medicine may refuse to issue or continue a certificate of registration or license * * * to any person guilty of the division of fees in a consultation or a reference of a patient to a specialist, when no actual professional service is rendered by the physician referring the case, without the knowledge of the patient or the person concerned in the payment thereof."—*Michigan Practice Act, Sec. 3, sub-sec. 6.*

"Those found guilty of the division of fees shall forfeit their membership."—*House of Delegates American Medical Association.*

"The College will not knowingly select for, or retain within its ranks anyone who practices fee-splitting directly or by subterfuge."—*American College of Surgeons.*

The foregoing resolutions and extract of the Michigan Law regarding the evil of fee-splitting that exists to a greater or less degree throughout the entire country and by reason of its existence exercises a menacing influence upon the standing of the profession as a whole, are indicative of the stand that is taken by our state and national organizations. Mere resolutions, while necessary, will not wipe out this evil. Something more than resolutions are required—they must be enforced without favoritism or prejudice. In addition, surgeons and physicians must come out and openly declare their determination and stand to not be a party

to this evil practice and having done so they must actively assist in exposing those who continue the practice of fee-splitting.

Our special committee on the Evils of Fee-splitting recommended that our members be given an opportunity to openly pledge themselves to neither give nor receive secret commissions for their professional services. To this end THE JOURNAL is open for the public recording of such pledges from our members. If you are desirous of thus joining the ranks or those who oppose this practice kindly notify the editor to that effect in order that we may have an official Roll of Honor for future reference and guidance.

In spite of the criticisms that have been offered it is only fair to those who have acted for the American College of Surgeons to believe that they have used their best judgment in selecting those who have been granted fellowship degrees. "There have been criticisms—there will always be criticism. There are two special points of attack—first: because the College is to be a 'Guild'—perhaps it is, in a sense, but always an open guild, open to all who can show fitness, wherever they come from; second: because it excludes men who, though not specialists, are doing good work in surgery; there are such men, but the College does nothing to such men, the failure to include them means that they are not, with few exceptions, the best men fitted to do the work in raising the standards that this college has set for its task."

"As for the practitioner of medicine, we believe that the action will help him to gain once more the position which is not always granted him today, that of the trusted adviser of the family, and it is believed that he will be the gainer if his patients learn not to demand work from him outside his chosen field."

It's easy enough to criticise, it's also easy to commend; we are inclined to commend in this instance for we believe that the ends strived for are commendable and that any organization that has for its objects the elevation of a branch of our profession as has the College of Surgeons will succeed in attaining their ideals—the elevation of the standing of American surgery and surgeons.

The supply of original articles derived from the papers that are read at our annual meeting is not sufficient for the needs of THE JOURNAL for an entire year. Consequently we are always pleased to receive original articles and case reports from our members. Will you not bear this in mind and give THE JOURNAL first preference when casting about for an organ of publication for your writings?

"God will not ask what college you graduated from, what honorary degrees you have, what scientific discoveries you have made, what medals you have won. He will ask if you have tried to make your work, your profession, your world better. He will ask if you have worked with your brother or against him."

—A. M. A. Bulletin.

The last issue as well as this one contains several new advertisements. Have you read them? Have you patronized them? They are not space fillers nor are they for ornamentation—they are a source of revenue that enables the Publication Committee to send you a better and a larger JOURNAL. The advertiser expects to receive a fair return upon the money that he is investing with *you* and *your* publication. In order that *your* JOURNAL may continue to receive this revenue it is absolutely essential that you consign your orders to those business men and firms that patronize *you*. They are honest; they are reliable; they will treat you fair and they merit and are entitled to your patronage. Give them your next order and tell them why you are doing so. You owe THE JOURNAL this co-operation.

Under Society News there will be found the annual reports of the Secretary and committees of the Kalamazoo Academy of Medicine. We urge that every reader take the time to read these reports. They reveal what a live, active society may do for its members. It is possible for such activity to exist in every county society. To bring it about requires work on the part of the members—co-operation. Your society can report as successful and interesting meetings as does the Kalamazoo Society if you and your fellow members will but give a little of your time to the effort. We congratulate the officers and members of the Kalamazoo Society upon the completion of such a successful society year.

Your JOURNAL for the past year will be bound for you at an expense of \$2 if you will express the twelve numbers to the Editor together with a check for \$2. They will be returned to you at the expiration of about three weeks—the time required for binding. This price will remain in force until February 1st.

Deaths

JOHN H. CROSBY, M. D.

Dr. John H. Crosby of Plainwell, Michigan, died at Bronson Hospital in Kalamazoo, December 17, 1913. The cause of death was Mesenteric Thrombosis in that part of the mes-

enterly supplying the upper part of the jejunum. He is survived by his wife and two children, Rachael three years old, and John H. Jr., who is one year old.

Dr. Crosby was born in New Buffalo, Michigan, June 17, 1877. In his early years his family moved to Three Oaks, Michigan, where he graduated from the common and High Schools. He then went to the University of Michigan, where he received the M.A. degree in 1902 and the M.D. degree in 1904. After graduating from medical school he located in Otsego, Michigan, as assistant to Dr. A. L. Van Horn, with whom he practiced until 1910 when he spent several months doing post grad-



JOHN H. CROSBY, M.D.

uate work in pediatrics in Vienna and Berlin. On his return from Europe he bought out the practice of Dr. B. A. Shepard in Plainwell and has been active in that place until the time of his death.

Once located in Otsego he soon became a member of his local medical society—the Kalamazoo Academy of Medicine, which society he has served faithfully in various capacities up to within a few days of his death. His last act for the Academy was to serve on the nominating committee for 1914 officers for the society, and was even on that day suffering with the trouble which a few days later caused his

death. He was president of the Kalamazoo Academy in 1911.

Dr. Crosby was a man large enough to become actively interested in other things than his professional life. He was at one time president of the Village of Otsego. He was an active member of the Presbyterian church and Masonic Lodges. He was a very aggressive member of the Plainwell School Board and only shortly before his death he had done much active work to put the Public Schools of Plainwell on a higher grade.

In 1905 he married Miss Fanny Cross of Otsego and three children were born to them. Two of these survive.

Dr. Crosby enjoyed an enviable popularity among the students while at the University, among the physicians not only of the Kalamazoo Academy of Medicine, but of the whole state as well, and among his clientage. He was a man of high professional attainments and one who carried out in his every day practice what he knew.

C. E. BOYS.

The following expression of sentiment was offered at a special meeting by the Kalamazoo Academy of Medicine with reference to the life and death of Dr. Crosby and unanimously adopted by the Society.

“Mr. President and Members of the Kalamazoo Academy of Medicine:

“I have been asked by the Academy to draw up resolutions expressing to the family of Dr. John Crosby, our sympathy in their recent bereavement. But if we who were his friends feel so great a personal loss, how can we hope to convey any comfort to the family who were so intimately and completely a part of his life? Our only way is to tell them how much we honored and loved him.

“We showed our respect for his professional ability and integrity by electing him President of the Kalamazoo Academy of Medicine, the highest honor we could give him. How much we loved him we had no definite way of showing, except by wanting him with us. None of our meetings seemed complete without his ready wit and quick, happy laugh. Even the severe pain of his last illness and the nearness of death could not overcome his brave spirit or his love of humor. He greeted us with his joke and smile to the last. One of his attending physicians said to me: ‘When my time comes, I pray that I may meet death with the same fortitude and sweet disposition that Dr. Crosby has shown throughout his last sickness.’

“So to the sorrowing family we can only say: ‘We have the same feeling of loss, but also we have the memory of a physician who was an honor to his profession, the memory of a man who did his work well—so well that he feared to face no man; so well that even death, with

whom he had fought so many battles for others, had no terrors for him.'"

R. E. BALCH,
Chairman Social Committee.

State News Notes

Dr. Chatel has been appointed as county physician for Keweenaw county.

Dr. Rudolph J. E. Oden, Cadillac, has been appointed as member of the Cadillac Public Library Board.

Dr. Don Griswold of Detroit is acting as city bacteriologist for the Detroit Board of Health.

Dr. L. R. Kratze formerly of Escanaba is now located in Engadine.

Dr. B. H. McMullen of Cadillac has returned home after a two weeks' visit at Johns Hopkins Hospital during the fore part of December.

The marriage of Dr. F. V. Burnham of Detroit to Miss Nellie M. Frey of Boston is announced by the Detroit daily papers.

On December first Dr. A. E. French succeeded Dr. E. Quandt as one of the county physicians of Wayne County.

Dr. J. A. McPherson of Grand Rapids has returned home from Rochester, Minn., where he submitted to a cholecystotomy.

Dr. Ralph Apted of Grand Rapids returned home Nov. 28, after a long period of service with the state militia in the Upper Peninsula. He resumed his duties as city physician on the first of December.

Dr. Louie Ethelyn Vandervoort of the Battle Creek Sanitarium staff became the bride of Henry Martin Stegman of the New York Tribune staff on Nov. 26th.

Dr. Charles W. Eliot, ex-president of the Harvard University will attend the Health Conservation Congress that will be held in Battle Creek during January.

It is stated that Dr. Harvey W. Wiley, formerly chief of the bureau of chemistry in Washington, has been selected by Mayor-elect Mitchel of New York as health commissioner of that city.

Dr. V. C. Vaughan addressed the union church meeting in Kalamazoo on Tuberculosis Sunday. His subject was "The Influence of Disease on Civilization."

Dr. Reuben Peterson delivered an address on "The Rights of the Unborn Child" at a public meeting held in St. Joseph under the auspices of the Berrien County Medical Society on November 21.

Dr. C. E. Stewart of the Battle Creek Sanitarium staff has returned home after a two months' European trip. The doctor read a paper at the International Congress of Medicine in London.

Dr. M. E. Roberts of Grand Rapids has returned home from Rochester, Minn., where he submitted to an operation for the cure of a chronic gastric ulcer.

Dr. J. T. Cooper, county physician, has asked the board of supervisors of Muskegon county for an appropriation of \$15,000.00 for the erection of a tuberculosis hospital.

Dr. A. M. Campbell, Burton R. Corbus and R. R. Smith of Grand Rapids, attended the annual meeting of the Kalamazoo Academy of Medicine on Dec. 9th.

A verdict of no cause for action was returned in the circuit court of Mecosta county in the case brought against Dr. W. J. Conover of Evart for alleged malpractice in treating a fracture of the leg.

Dr. W. H. Sawyer of Hillsdale delivered a lecture on Public Health at a mass meeting held in the Fountain Street Baptist Church in Grand Rapids on Sunday evening, Dec. 21.

Dr. E. H. Hayward has resigned as bacteriologist for the Detroit Board of Health and has opened a fully equipped laboratory in the Brietmeyer Bldg. for clinical, bacteriological and chemical examinations.

According to Attorney-General Fellows adenoids can be classed as a malady and be treated under the direction of the judge of probate in cases where the parents of the children are too poor to furnish medical attention.

The Detroit papers intimate that the United States Bureau of Health is contemplating an investigation and study of the diphtheria epidemic that is prevailing in that city. The recommendation has been made by Surgeon-General Rupert Blue.

The Northern Tri-State Medical Association of physicians in Michigan, Indiana and Ohio will hold its semi-annual meeting in Kalamazoo on Jan. 13th. THE JOURNAL has not been supplied with the data and is thus unable to publish the program that is to govern this session.

Dr. Ferris Smith, for a number of years assistant to Dr. Canfield at Ann Arbor, has returned from a year's postgraduate work in Europe and opened an office in the Metz Building, Grand Rapids. The doctor will limit his practice to Ear, Nose and Throat diseases.

It is intimated that the appointment of a successor to R. L. Dixon, secretary of the State Board of Health will be made by the Governor before the first of the year. The selection will undoubtedly be either Dr. John L. Burkart of Big Rapids or Dr. Don M. Griswold of Detroit.

A sixty days' tour of the well known European surgical clinics is being arranged under the auspices of the Georgia Surgeons' Club, to close with the meeting of the Congress of Surgeons of North America in London the latter part of July, 1914. Representative surgeons are invited, and may secure details of the trip from the Secretary, Dr. R. M. Harbin, Rome, Ga.

The time requisite for the setting up of copy and the revision of proof of the Transactions of the Clinical Society has been so limited and the issue of THE JOURNAL having been delayed on two occasions on that account, we have decided to omit the January Transactions in our February JOURNAL. The February JOURNAL will be a Special Number and

will contain all the papers that were read in the Section on Ophthalmology and Oto-laryngology at the Flint meeting. The Transactions of the Clinical Society will appear in the March and subsequent issues without interruption.

County Society News

BAY COUNTY.

The Annual Meeting of the Bay County Medical Society was held at the Bay City Club on Tuesday, Dec. 9th, at 8 P.M.

At 7 o'clock the Society was entertained at dinner by the retiring President, Dr. G. W. Moore of Munger, thirty-five members being present.

After dinner the Society was called to order by the President, and the reports of the Program Committee, Secretary and Treasurer were listened to. The annual address of the President then followed, on "The Service of the Physician to the Public." This address we hope will be published in full in THE JOURNAL.

The election of the Board of Directors then followed, and the following were chosen: Drs. C. A. Stewart, J. M. Jones, G. W. Trumble, T. A. Baird, H. B. Morse and A. W. Herrick. The Board of Directors retired and elected the following officers:

President—Dr. C. A. Stewart, Bay City.

Vice-Pres.—Dr. J. M. Jones, Bay City.

Sec'y-Treas.—Dr. G. W. Trumbull, Bay City.

Delegate to State Society—Dr. G. W. Moore.

Alternate to State Society—Dr. W. G. Kelley.

Dr. T. E. Ruggles of Bay City was elected a member of the Medico-Legal Committee.

The Society voted to request the Health Officer to make a monthly report before the Society of health conditions in the city.

The Society then adjourned.

On December 2nd the Bay County Medical Society entertained the ladies. At 7 P.M. a banquet was served at the Bay City Club, with fifty-seven members and guests present. After the banquet a program of music and speaking occurred.

Rev. T. E. Webb of the First Baptist Church, Bay City, spoke on "The City of Our Heart's Desire." Judge C. L. Collins of Bay City, gave some interesting comparisons between the professions of law and medicine. Dr. C. H. Baker gave a response in which he emphasized the importance of team work in the medical profession. Dr. C. A. Stewart spoke a few words in appreciation of the help of the ladies during the last year.

Following the program a social hour was enjoyed, and everyone voted that our second "Ladies' Night" of the year was a success.

H. N. BRADLEY, Secretary.

CHIPPEWA COUNTY.

The annual election of the Chippewa County Medical Society was held at the Park Hotel on Dec. 2nd, 1913.

The minutes of the last meeting were read, with the report of the Secretary-Treasurer, and approved. The following officers were elected unanimously for the ensuing year:

President—James Gostanian, Sault Ste. Marie.

Vice-Pres.—R. E. Stocker, Brimley.

Sec'y-Treas.—Clayton Willison, Sault Ste. Marie.

Delegate—T. Greely Fox, Rickford.

Alternate—H. E. Perry, Newberry.

JAMES COSTANIAN, Secretary.

GENESEE COUNTY.

The regular monthly meeting of the Genesee County Medical Society was held on November 25th, 1913.

A paper entitled "The Complement Fixation Test and its Clinical Value in Gonorrhea" was read by Dr. William E. Keane of Detroit. The discussion was opened by Dr. Cook of Flint.

Dr. E. D. Rice of Flint gave a very interesting talk on a case of "Foreign Body in the Bronchus." Dr. Wm. Clift demonstrated the X-ray plates which were taken of the case, and the discussion was opened by Dr. Bird.

A rising vote of thanks was given Dr. Keane for the paper which he gave the Society.

We are at present considering the publication of a monthly bulletin, which will contain the reports of the meetings, an outline of the papers which are read, and any action which may be taken by the Society.

ROBERT D. SCOTT, Secretary.

GRATIOT COUNTY.

The Annual Meeting of the Gratiot County Medical Society was held at the Wright House in Alma, Thursday, Dec. 1th, 1913. The following program was carried out:

Call to order by the President.

Reading of minutes of last meeting.

Reception to new members.

Clinic:

Report of delegate to State Society Meeting.

Report of retiring Secretary.

Discussion.

Address of retiring President Barstow.

Election of officers for 1914.

Address by Prof. Reuben Peterson of Ann Arbor, "How and When to Empty the Uterus in Antepartum Eclampsia."

In the evening Dr. Peterson gave a popular lecture to the public in the Alma High School Auditorium, the subject being "The Rights of the Unborn Child."

The following officers were elected for the year of 1914:

President—Dr. I. N. Monfort, Ithaca.

Vice-Pres.—Dr. E. H. Foust, Ithaca.

Sec'y-Treas.—Dr. E. M. Highfield, Riverdale.

Since our last annual meeting we have held four regular quarterly meetings, including this one. Two outside speakers have addressed us, one giving a lantern-slide demonstration, and the other reading a paper by proxy. Four of our own members have read papers. There are 32 doctors in Gratiot County, 25 of whom are members, or 78 per cent. We should have at least 95 per cent. members belonging to our Society.

E. M. HIGHFIELD, Secretary.

HURON COUNTY.

The Huron County Medical Society held its regular quarterly meeting on Tuesday evening, November 18th, in Bad Axe.

Dr. George E. McKean of Detroit read an interesting paper on "Typhoid Prophylaxis," also one on "Diagnosis and Treatment of Chronic Non-Tuberculosis Joint Disease (Rheumatism)" was given by Dr. Frederick C. Kidner of Detroit. Dr. Louis J. Hirschman of Detroit was also present and took part in the discussion. After the meeting supper was served at the Hotel Morrow.

The election of officers was postponed until the next meeting.

DANIEL CONBOY, Secretary.

INGHAM COUNTY.

The Ingham County Medical Society held its Annual Meeting November 20th, and elected the following officers:

President—Samuel Osborn, Lansing.
Vice-Pres.—B. M. Davey, Lansing.
Sec'y-Treas.—F. M. Huntley, Lansing.
Delegate—L. W. Toles, Lansing.
Alternate—M. L. Holm, Lansing.
Med.-Legal Com.—G. F. Bauch, Lansing.

HENRY S. BARTHOLOMEW, Secretary.

JACKSON COUNTY.

The Thirteenth Annual Meeting of the Jackson County Medical Society was held at 2 P.M., Dec. 4, 1913, in the Library Auditorium. Twenty-five members were present.

Drs. Corwin S. Clark, W. A. Stoops, Glenn C. Hicks and F. L. Rose, all of Jackson, were received as new members. Our total membership now is fifty, the greatest it has ever been.

The Treasurer's book showed a balance of \$25.62 on hand.

A committee, appointed at the June meeting to work out a new fee schedule, made its report and recommended a raise to \$2.00 instead of \$1.50 for day visits, and \$3.00 for night visits. After an enthusiastic discussion the Society voted to put the matter over to a special meeting to be called very soon, and to which all the physicians of the city, whether members or not, shall be invited.

The Tuberculosis Committee reported a large amount pledged, and a portion collected.

The officers for the new year are as follows:

President—Dr. W. A. Gibson, Jackson.
Vice-Pres.—Dr. W. H. Enders, Jackson.
Secretary—Dr. G. A. Seybold, Jackson.
Treasurer—Dr. P. I. Edwards, Jackson.
Delegate—Dr. C. D. Munro, Jackson.
Alternate—Dr. P. E. Hackett, Jackson.

Dr. R. S. Dixon of Lansing, gave a short talk on "Every Physician a Health Officer." It was very much regretted that Dr. Dixon had to hurry home because of illness of his family.

The annual banquet was held at the Otsego Hotel at 7:30 P.M., about forty attending. Dr. C. D. Munro, as toastmaster, introduced the speakers who spoke on the following toasts:

"The Code of Ethics," Rev. T. B. Burchell.

"Our Professions," Atty. Justin R. Whiting.

"The Ladies," Dr. Flemming Carrow.

"Dignity of the Medical Profession," Rev. Father J. M. Doyle.

To close the evening Dr. Munro called upon Dr. W. A. Gibson, the new President.

G. A. SEYBOLD, Secretary.

KALAMAZOO ACADEMY.

Thirtieth Annual Meeting, Tuesday, December 9, 1913. Afternoon session, beginning promptly at one o'clock at Academy Rooms, Public Library:

Payment Annual Dues: Local members, \$5.00; out-of-town members \$4.00. Payable to F. Elizabeth Barrett, Treasurer.

Business Meeting. Election of Officers. Nominating Committee: Dr. G. D. Carnes, Dr. J. H. Crosby, Dr. J. B. Jackson.

An informal social half-hour followed by a

banquet was held at the New Burdick House at 6:30 o'clock.

Scientific Program:

1. "Diagnosis and Treatment of Certain Obscure Infections with Special Reference to Arthritis," Dr. Ernest E. Irons, Chicago, Ill.

Discussion opened by W. A. Perkins, Kalamazoo; Dr. J. H. Crosby, Plainwell; Dr. R. G. Leland, East LeRoy, Mich.

2. "Observations on Gastric Ulcers: A Study of Six Hundred Cases," Dr. Christopher Graham, Rochester, Minn.

Discussion opened by Dr. R. R. Smith, Grand Rapids; Dr. O. H. Clark, Kalamazoo; Dr. R. E. Balch, Kalamazoo; Dr. A. W. Crane, Kalamazoo.

Evening Session, 6:30 o'clock:

Informal social half-hour in parlors of the New Burdick.

Banquet, 7:00 o'clock:

Toastmaster, Dr. Herman Ostrander.

Exaugural Address, Dr. C. E. Boys, Kalamazoo.

Reminiscences, Dr. J. D. Carnes, South Haven.

Toast, Hon. Walter Taylor, Kalamazoo.

Abstract of Report of Two Cases. By Dr. G. W. Green, Dowagiac, Mich.

1. History was of a patient who had tuberculosis followed in four years by paralysis in 1904. In 1912 melanotic spindle-celled sarcoma was removed from right labium. Removal of superficial and deep inguinal glands. Postoperative treatment with X-ray with gain of nine pounds.

2. A baby thirty-six hours old. Examination revealed a blind pouch three and one-half centimeters long where the rectum ought to be. Attempts to open into the large bowel unsuccessful. Abdomen was opened and an enterostomy was done. Normal bowel movements resulted. Child died in ten days from inactive kidneys and paralyzed bowels. Autopsy: The rectum was found back of posterior parietal peritoneum, where it tapered down to a cord three m.m. in diameter and six c.m. long. The bowel re-entered the abdomen where it assumed a normal course to the right iliac region.

Abstract of Paper "Syphilis of the Nervous System." By Dr. Hugh T. Patrick, of Chicago, Ill.

Pathology caused by presence of spirochaeta pallida.

Lesions of the nervous system do not differ from lesions in other tissues, viz.: liver, kidney, muscle or skin. Granulation tissue develops, necrosis and fatty degeneration results.

Syphilis of nerve cells or nerve elements themselves does not occur but of adjacent tissues outside of the specific nerve elements. Nerve cells or nerve fibers involved secondarily, extra neural syphilis.

Lesions are four in number, vascular, neuritic meningitic, and gumma. Gummatous lesions do not always occur in tumor form but in form of infiltration of vessel walls, and surrounding tissues, thus one has syphilitic meningitis or neuritis.

Symptoms:

Extremely variable; irritation and pressure from infiltration; interference with circulation.

Size and extent of lesion may be small or large, slow or rapidly progressive, local or general involvement. When blood vessels of the brain are infiltrated the process is gradual, thus the blood supply is gradually lessened. Variability, irregularity, unreasonable unexpected symptoms may be expected. Double vision momentarily one day, numbness of the hand or difficulty of micturition the next day, etc.

Syphilis rarely causes hemorrhage in the brain,

more often thrombosis; vessel calibre is diminished, interference of circulation. Cellular infiltration, causes transient symptoms; numbness of the hand, unilateral weakness, forgetfulness, carelessness in dress and personal tidiness, headaches, not specially nocturnal, more or less pain in the head and dizziness.

Pseudo-coma occurs during which the patient breathes stertorously, stupor reversal form is present; violently destructive, conclusive type, suddenly changed to unconscious and passive condition. This antedates stage of paralysis when blood stream is completely blocked off or death. There may be Jacksonian seizures.

Cranial nerve signs; third, fourth, and sixth, third and sixth particularly due to pressure from infiltration throughout course to eyes. Difficulty of respiration and swallowing and rolling of the tongue when basilar vessels are affected by endarteritis.

Syphilis usually not febrile but occasionally temperature may be high when severe toxemia occurs. Gumma may manifest itself like that of a tumor then choked disc may arise.

Syphilis of the cord is of three types:

No. 1. French type. Acute transverse myelitis, due to occlusion or interference of circulation in anterior and posterior arteries and membranous blood supply. Remak's paraplegia. Symptoms dependent upon site of lesion whether cervical, dorsal or lumbar.

No. 2. Erbs' paralysis. May not be syphilitic, marked spasticity.

No. 3. Reticulitis. Extra-medullary, extra-spinal; circulation of anterior and posterior roots disturbed. Posterior root involvement causes pain and irritation. Anterior root (motor), trophic fibres for motor cells, unilateral symptoms of progressive muscular atrophy. Pain, anesthesia and atrophy of small hand muscles. Muscles involved depend upon site of lesion; weak painful arm or neuritis results.

Diagnosis. History very important. "No person may assume to be free from syphilis because of age, sex, religious affiliation, occupation or status in society or standing in the community."

Cicatrix of hard chancre may not be found. Wassermann test is reliable; the technic of the test must be perfect and free from variations. Lumbar puncture. Irido-platinum needle ten to fifteen c.m. in length used. Seepage from puncture avoided by small calibre of needle.

Treatment. Remember that syphilis is refractory. There are incurable cases. Mercury at once when the diagnosis is made, all the patient can stand. Given in inunction or intramuscularly. Salvarsan. Iodides not curative. Mixed treatment condemned.

Discussion: Dr. W. A. Stone—In 1893, 50 per cent. of paretics believed to have had syphilis; in 1903, 100 per cent. have had syphilis.

Dr. A. M. Barrett—*Spirochaeta pallida* have been demonstrated in the brain of paretics. Many psychoses have for underlying cause syphilis but gumma or endarteritis not demonstrated. Fluid of the brain and cord shows evidence of syphilis.

The Secretary's Annual Report:

The Society has convened for one special and twenty-three regular sessions. All of these were held in the city of Kalamazoo except two, one in South Haven and one in Vicksburg. There were thirty-six in attendance at the special meeting and an average of forty-six at the regular meetings. In 1912 the average was 38.7. The largest number

in attendance at any one meeting was eighty-four as compared with sixty in 1912.

The Society has four honorary, one of whom is still practicing, one associate and one hundred and thirty active members. This includes the one honorary member in active practice. One has discontinued the practice of medicine or at least he was not practicing at the time he left the city, with dues unpaid. One outside member had not paid dues for 1913 and one outside member had moved to Montana. Ten have been elected to membership as compared with fourteen in 1912. Three members have been removed from our midst by death, Dr. A. Hochstein and Dr. John Fletcher, of Kalamazoo, and Dr. G. W. Cornish, of Lawton. Two were made honorary members this year.

The medical survey of Allegan, Van Buren and Kalamazoo Counties is as follows:

Allegan County—Number of doctors registered, 34. Number that are members of the Academy, 17, or 50 per cent.

Van Buren County—Number of doctors registered, 46. Academy members, 23, or 50 per cent.

Kalamazoo County—Number doctors registered, 107. Academy members, 83, or 77 per cent.

Total number registered in the three counties, 187.

Academy members registered in the three counties, 122, or 65 per cent.

We are loaded with committees, but I believe that the chair should appoint a committee on membership to secure new members and to interest the medical men not members. The board of censors might be delegated this important phase of our work. There are sixty-five men in our community, and that adjacent, that are not members. There are some ineligible, but this should not prevent us from seeking those that are eligible.

The Bulletin has announced the date, hour, place, and published the programs for twenty-three meetings. Abstracts of the papers presented before the Academy have been prepared with as great care as possible. Only the salient points of the subject-matter have been printed. The editor has made as great effort as possible to keep the Bulletin supplied with advertisements. The Bulletin has been issued for three years or fifty-eight times at a total cost of \$493.85, or an average cost of 6 $\frac{2}{3}$ c per member per issue. The mailing list consists of members of the society, medical men in the community that should be members, local laymen greatly interested in medical affairs in general and county secretaries of the state. The latter are mailed the Bulletin at the discretion of the editor. The receipts from advertising in the Bulletin have totaled for three years, \$481. This leaves a deficit of \$12.85 for the three years. The editor wishes to announce here that unless the members patronize our advertisers and mention the fact that their "ad" was seen in the Bulletin we will be unable to derive a revenue through the avenue of advertising. Heretofore I have been successful in filling the Bulletin up with ads. on the date of the annual meeting, but this year I have been told repeatedly that the ad. given was only complimentary and that it did not pay. Again I was told that I would have to show a card that the Commercial Club endorsed the Bulletin.

We have been active in many phases of medical work, but we are weak in concerted action upon health and medical legislation. The programs have been of a great variety and the standard of scientific work presented has been of an advanced character. "You get it first" at the Academy is not putting it too strong.

We strive to maintain a high standard of efficiency but we can not unless every member takes an active part in the programs as essayist or in the

discussion. He should sacrifice his personal convenience to be present at as many meetings as possible. He should make visitors welcome and extend a cheerful greeting to colleagues and laymen as well. He should be an active member in committee work and not passive. He should feel free to make suggestions as to good essayists for the program and as to improvement in the management of the society. The master-words in your medical society are Work and Co-operation, "lend a hand," for to travel hopefully in the practice of medicine is to labor in your medical society.

"The well-conducted medical society should represent a clearing house, in which every physician of the district would receive his intellectual rating, and in which he could find out his professional assets and liabilities. We doctors do not 'take stock' often enough, and are very apt to carry on our shelves stale, out-of-date goods. The society helps to keep a man 'up to the times,' and enables him to refurnish his mental shop with the latest wares. Rightly used, it may be a touchstone, to which he can bring his experiences to the test and save him from falling into the rut of a few sequences. It keeps his mind open and receptive and counteracts that tendency to premature senility which is apt to overtake a man who lives in a routine."—Osler's *Aequanimitas*.

C. B. FULKERSON, Secretary.

Treasurer's Annual Report for 1913:

Receipts.

| | |
|---|------------|
| Balance forward from 1912 | \$ 9.05 |
| Membership | 572.00 |
| Advertising from Bulletin | 229.00 |
| Transferred from special assessment fund .. | 138.60 |
| Loan from bank | 93.00 |
| Left from banquet | 11.50 |
| Dinner to outside members | 19.00 |
| A. M. A. Public Health Com. | 12.00 |
| Social Hygiene Committee | 23.00 |
| | <hr/> |
| | \$1,107.15 |

Disbursements.

| | |
|------------------------------|------------|
| State Society | \$ 381.75 |
| Telephone | 30.65 |
| Telegrams | 1.15 |
| Postage and stationery | 76.70 |
| Magazines | 9.75 |
| Care of rooms | 29.83 |
| Light | 6.67 |
| Bulletin printing | 267.35 |
| Flowers | 21.30 |
| Chairs, six doz. | 45.00 |
| Improvements | 138.60 |
| Repairs | 2.00 |
| Printing advertising | 3.60 |
| Church rental | 12.00 |
| Insurance | 10.00 |
| Cartage | 1.14 |
| Civic League | 15.00 |
| Interest | 1.14 |
| Paid on bank note | 50.00 |
| | <hr/> |
| | \$1,103.63 |

| | |
|--|----------|
| Cash on hand | 3.52 |
| One outside member dues unpaid for 1193. | |
| Special assessment fund: | |
| 80 members paid at \$3.00 | \$240.00 |
| Desk and magazine rack | \$ 42.50 |
| Repair of chairs | 93.60 |
| Desk light | 2.50 |
| Total | <hr/> |
| | 138.60 |

| | |
|--|----------|
| Balance from special assessment on savings | |
| acct. | \$101.40 |

F. ELIZABETH BARRETT, Treasurer.

Report of Clinical Program Committee:

The following cases were operated:

| | |
|--|-------|
| Abscess (pelvic) | 4 |
| Adenoids | 11 |
| Amputations | 3 |
| Anus (oper. for art.) | 1 |
| Appendicitis | 20 |
| Bartholin's Glands (resected) | 2 |
| Cholecystotomy | 1 |
| Circumcision | 1 |
| Curettage | 10 |
| Cysts (ovarian) | 3 |
| Cystoscopic Exam. | 3 |
| Eye (enucleation) | 1 |
| Fracture (comp.) | 1 |
| Gastro-enterostomy | 3 |
| Hemorrhoids | 4 |
| Herniotomy | 1 |
| Hysterectomy (supra.) | 1 |
| Hysterectomy (vaginal) | 1 |
| Laminectomy | 1 |
| Orchidectomy | 1 |
| Ovariectomy | 6 |
| Panhysterectomy | 3 |
| Perineorrhaphy | 8 |
| Perineorrhaphy (for recto-vag. fis.) | 1 |
| Peritonitis (T. B.) | 1 |
| Prostatectomy | 2 |
| Rd. Lig. Op. (Montgomery) | 4 |
| Salpingectomy | 4 |
| Spermatocele | 1 |
| Thyroidectomy | 1 |
| Tonsillectomy | 11 |
| Trachelorrhaphy | 5 |
| | <hr/> |
| Total | 120 |

Cases presented at the

| | |
|-----------------------------|----|
| Dermatological Clinic | 10 |
| Neurological Clinic | 22 |
| Medical Clinic | 12 |
| Tuberculosis Clinic | 21 |
| Scoliosis Clinic | 11 |

Miscellaneous Case Demonstration:

| | |
|------------------------------|-------|
| Tuberculosis Hip | 1 |
| Hirschsprung's Disease | 1 |
| | <hr/> |

| | |
|---------------------------------|-------|
| Total cases | 80 |
| Grand total— | |
| Surgical cases | 120 |
| Medical and Miscellaneous | 80 |
| | <hr/> |

200
"To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."—Osler.

DR. A. S. YOUNGS, Chairman.

Annual Report of The Social Hygiene Committee:

In March of this year the Social Hygiene Committee in co-operation with the president of the Vice Commission arranged a meeting for the discussion of social diseases. This meeting was held in the Academy of Medicine rooms. There were in attendance members of the Ministerial Alliance, members of the bar, city officials, teachers of our public schools, members of the vice commission and physicians. The object of this conference was to discuss social diseases as they exist in Kalamazoo. Physicians presented the medical side.

1. Social diseases as found in juvenile work.
2. Social diseases from the surgeon's standpoint.
3. Social diseases in relation to the house and posterity.
4. Social diseases in relation to our institutions and the insane.

The influence of this meeting has been far-reaching. We feel that this conference with people of influence has done much to make it possible for sex hygiene to be taught in our public schools.

Many lectures have been given on social hygiene before the women's societies of our churches.

In co-operation with the Public Health Education Committee, lectures on social diseases have been given at Kalamazoo College, Parsons' Business College, two of our paper mills and several other factories.

A member of our committee has responded to two requests from outside of the city to give information upon the subject of social diseases.

More has been done for the girls of our city than for the boys. We trust that next year's committee will do more than we have been able to do.

Respectfully submitted,

ALICE BAKER ELLSWORTH.

Annual Report of the A. M. A. Public Health Education Committees:

Addresses reported, 43.

Miscellaneous addresses, 18.

Total number of people reached, conservative estimate, 5,500.

Medical Aspects in Juvenile Court, Dr. Alice Barker Ellsworth.

Social and Personal Hygiene, Dr. Alice Barker Ellsworth.

First Aid in Emergency, Dr. C. E. Boys.

Eugenics, Prof. Praeger.

Demonstration on Home Resources, Dr. Frances Elizabeth Barrett.

Child Welfare, Dr. Della P. Pierce.

Eugenics, Dr. Victor C. Vaughan, Ann Arbor. (Attendance at this lecture a record breaker.)

What Every City Can Do, Dr. W. A. Evans, Chicago, Ill

DR. DELLA P. PIERCE, Chairman.

Annual Report of the Committee on Illegal Practice:

The committee has, during the year, taken up with the Prosecuting Attorney a number of quack advertisements that have appeared in the local papers. In all the cases these advertisements were so worded that they came within the letter of the law.

The committee has also investigated the legal standing of the men who were running quack advertisements in the local papers, but in each case they were properly registered and the Prosecutor could take no action.

The case of Doctor Croziero, who has been working the small towns in this part of the state, was taken up with the Prosecutor. He promised to swear out a warrant against Croziero if the State Board of Medical Registration would notify him that the man was violating the Medical Registration Act. This was taken up with the State Board but no action was taken. However, the Prosecuting Attorney of Van Buren County afterwards had him arrested and fined for illegal advertising. There is no question that the State Board of Registration could take away his license if it would act.

The committee wishes to present the following resolution in appreciation of the active part the Chicago Tribune has taken in the suppression of quacks.

Be It Resolved, That the Academy of Medicine heartily endorses the attitude that the Chicago Tribune has taken toward all fake medical advertising, quack doctors, patent medicine, etc., and the elimination of all such advertising from its columns.

Be it further Resolved, That the Secretary be instructed to make copies of said resolution, one

for the files of the Academy and one to be mailed to the Chicago Tribune.

W. DEN BLEYKER, Chairman.

Annual Report of Public Health Committee:

Your committee on Public Health and Education respectfully submits the following report:

1. Feb. 5, "Oral Hygiene," Dr. H. H. Tashjian.

2. Feb. 5, "Tonsils and Adenoids," Dr. E. J. Bernstein.

3. Feb. 12, "Child Welfare," Miss Lucy Gage, Western State Normal.

4. Feb. 19, "Hereditry," Dr. L. H. Harvery, Western State Normal.

5. Feb. 26, "Housing Problems," Dr. L. H. Stetson, Kalamazoo College.

6. Feb. 26, "The Housing Problem and Its Relation to Tuberculosis," Dr. S. R. Light, Dr. Herman Ostrander.

7. March 5, "Pure Food and Drugs," Dr. S. R. Light.

8. March 12, "Contagion," Dr. Blanche Epler.

9. March 26, "Community Hygiene"

(a) "Our Streets and Sewers," Andrew Lenderink, City Engineer.

(b) "Our Water Supply," George Houston, City Water Commissioner.

(c) "Disposal of Refuse and Garbage," Dr. A. H. Rockwell, City Health Officer.

(d) "Sanitary Plumbing," Mr. W. H. Andrews, City Plumbing Inspector.

(e) "Flies as a Cause of Distribution of Communicable Diseases," C. S. Carney.

DR. L. H. STEWART, Chairman.

Report of Library Committee:

The Library Committee has been greatly hampered this year on account of their inability to use the funds appropriated to them by the Academy, but which have not been available by reason of large expenditures for other things.

We have therefore only permitted ourselves to subscribe for two magazines, "Journal of Infectious Diseases" and "Annals of Surgery."

Through the courtesy of the management of the A. M. A. we have been given the "American Journal of Diseases of Children," and "Journal of the American Medical Association," and other journals, a list of which is appended, have been sent us gratis.

We have been asked to order a number of books, which are really needed to keep up the interest in the library, and desire an appropriation of at least \$70 to make up for the shortage this year.

A reading desk for keeping the journals has been added to the library equipment, but though this is for the library, the fund for it was independently subscribed. This may possibly be charged up to the library account, but we feel that the full amount should be spent for books and periodicals.

New Your Medical Journal, A. R. Eliot.

The Therapeutic Gazette, H. A. Hare.

The Journal of the Michigan State Medical Society, State Council.

Interstate Medical Journal, Otho F. Ball, Philip Skrainka.

California State Journal of Medicine Medical Society of California.

The Journal of the American Medical Association Board of Trustees.

International Journal of Surgery, International Journal of Surgery Company.

Indianapolis Medical Journal, S. E. Earp, A. W. Brayton and Scherer Norris.

New York State Journal of Medicine, John Cowell Mac Evitt.

Merck's Archives, Merck & Co.
American Journal of Diseases of Children, American Medical Association.

Detroit Medical Journal, James Herbert Dempster.
St. Paul Medical Journal, Ramsey County Medical Society.

The American Medical Compend, Toledo Medical and Surgical Reporter Co.

The Physician and Surgeon, J. W. Keating & Reuben Peterson.

American Medicine, H. E. Lewis, Chas. E. Woodruff.

Dominion Medical Monthly, Geo. Elliott.

The Cleveland Medical Journal, Oscar T. Schultz.

E. J. BERNSTEIN, Chairman.

Report of Program Committee:

By way of report it may be of interest to summarize and classify the programs of the Academy of Medicine for the year 1913.

Papers or discussions to the number indicated were given before the Academy of Medicine on the following subjects:

| | |
|--|----|
| Internal Medicine | 8 |
| Surgery | 9 |
| Public Health | 9 |
| Nervous and Mental Diseases | 4 |
| Dermatology and Syphilology | 3 |
| Infectious Diseases | 7 |
| Gynecology | 2 |
| Medico-legal | 3 |
| Pediatrics | 1 |
| Genito-urinary | 1 |
| Reviews of Literature and Case Reports | 48 |
| Reports of Meetings or Clinics attended by Members | 6 |

Of those who have appeared before the Academy thirty were not members of the Academy and came from a distance.

There were six papers given by non-members of the Academy, residents of Kalamazoo.

There were thirty-two papers by members of the Academy.

The attention of the members of the Academy is called to the fact that it is impossible for a program committee consisting of only a few members to know of all the interesting papers that might be available and it is therefore highly desirable that all members who have knowledge of persons who could supply papers of interest to the Academy should advise some member of the program committee of this fact.

Respectfully submitted,

S. R. LIGHT, Chairman.

C. B. FULKERSON, Secretary.

TRI-COUNTY SOCIETY.

At the regular meeting of the Tri-County Medical Society, held Nov. 6, 1913, the following officers were elected for the ensuing year:

President—Dr. Otto L. Ricker, Cadillac.

Vice-Pres.—Dr. Albert E. Stickley, Mesick.

Secretary and Treasurer—Dr. Rudolph J. E. Oden, Cadillac.

Board of Directors—Drs. C. E. Miller, W. J. Smith, Cadillac; V. F. Huntley, Manton.

Program Committee—Drs. Rudolph J. E. Oden, D. Ralston, G. D. Miller, Cadillac.

Delegate to State Meeting—Dr. S. C. Moore.

Alternate—W. B. Wallace.

Finance Committee—Drs. J. M. Wardell, B. H. McMullen, Cadillac; W. B. Wallace, Manton.

Medico-Legal Com.—Dr. V. F. Huntley, Manton.

R. J. E. ODEN, Secretary.

The regular meeting of the Tri-County Medical Society was held at Cadillac Thursday, December 4th, 1913. The Society was entertained at a dinner at 6:45 P.M. at the home of Dr. and Mrs. O. L. Ricker. The doctors comprising the Society, together with the special guests, made a very sedate looking gathering. The good feeling and fellowship which is always predominant among the physicians of the Tri-County Medical Society waxed to the highest degree. At the close of the elaborate dinner the guests repaired to the living room, where, amid the fragrant fumes of choice Havanas, the reels of wisdom and wit began to unroll, until the house was called to order and the regular program was begun.

The papers read were, "Repair of Fractures," by Dr. Rudolph J. E. Oden of Cadillac; "Recent Advances in Bone Surgery," by Dr. G. D. Miller of Cadillac, and "Indications for Cerebral Decompression," by Dr. Frederick Warnshuis of Grand Rapids. After the papers had been read, Dr. W. T. Dodge of Big Rapids, one of the honorary guests, opened the discussion in a very fitting manner. Dr. Dodge being a surgeon of many years' experience, and a student, has a storehouse of information worth while, and as always is the case, he was very generous in sharing it.

Dr. B. H. McMullen, who recently returned from Baltimore where he spent some time at the Johns Hopkins Hospital, and in Dr. Kelley's Private Hospital, was full to overflowing with new ideas, and after ably discussing the papers presented he deviated from the subject and related many of the new things which he had learned while away, all of which were of extreme interest to everyone present.

Doctors D. Ralston, J. M. Wardell, C. E. Miller, in fact everyone present, took part freely in the discussion, deviating at times with happy remarks, all pertinent and apt. The essayists closed the discussion of their papers.

Dr. Warnshuis, the Secretary of the State Medical Society, had favored us by his presence. Although he was a stranger to most of the members, they all felt towards him as if he were an old acquaintance. The State JOURNAL has made such rapid strides forward, and has reached such a state of excellence during his short term of service that for this reason the presence of Dr. Warnshuis was especially appreciated. His ability to fill the position he now holds has already been demonstrated, and was emphasized more than ever during the evening. The paper which he presented showed that he was not only capable of acting as Secretary, but also that he was a student and well abreast of the times.

The Society by a rising vote expressed their thanks to Dr. Warnshuis for attending the meeting and also for the part he took in making it instructive and entertaining. He may hereafter consider himself a welcome guest at any time he may choose to favor the Society with his presence, and may also feel assured that the Tri-County Medical Society is, and will be a loyal supporter of any move which may be of interest to the State Society.

During the course of the evening Dr. S. E. Niehardt of South Boardman, and Dr. J. W. Jackman of Harietta, were elected to membership of the Society.

By a unanimous rising vote the Society expressed its appreciation to the Host and Hostess, Dr. and Mrs. Ricker, for their royal entertainment.

After an informal experience meeting, lasting into the early hours, the Society adjourned, feeling that the Tri-County Medical Society is a live organization and is keeping abreast with any other similar organization.

RUDOLPH J. E. ODEN, Secretary.

County Secretaries Department

Each individual society has, as a rule, one obstacle that is exhercisingly bobbing up and preventing a united, concentrated exhibition of organized professional energy and influence. In one county it may be professional jealousy, in another a general lack of interest and in another a domineering "clique," etc., etc. Whatever it may be it plants itself midway in the road and prevents progress and advancement with an ultimate result that that county society remains in a dormant, semi-quiescent state, utterly failing to accomplish the purpose for which it was organized.

It is up to the county secretary to make the diagnosis as to what is the real cause of his society's failure to progress and having determined the cause he must then institute the necessary measures to get rid of it. The following suggestions may enable some of our secretaries to instill new life and activity in their organizations:

1. Think, plan, and study your society, not every two, three or four weeks, but every day.
2. Take an active interest in National, State and County organization efforts and apply their methods whenever possible to your society.
3. Be prompt and courteous in your correspondence with your members.
4. Learn to be a good mixer.
5. Make it a point to be the first one at your meetings to greet the old, welcome the new members and introduce your invited guests.
6. Become acquainted with every member; ascertain his likes and dislikes and get him interested in society work by utilizing his "hobby."
7. Manage to get two warring members together, but, having done so do not run away. Stay by them and if their conversation is drifting back to the old sore, stick in your oar, back water for a while and then steer them on a new course. The idea being to make them realize that they have something in common and that the other fellow isn't such a reprobate after all. If you do this once or twice the old bone of contention will remain buried and these men will remain friends.
8. Plan a "feed," a smoker or dinner often. Get the dignified member to unlimber and loosen up and tell his favorite story and then come back at him with one just a little better and you will have him interested.
9. Get your bashful member, who crawls off in some corner, to be active on some committee or have him discuss a paper; this will cause his nervousness to disappear and he will become one of your ready helpers.

10. Have three or four members upon whom you can always depend and if, after the reading of a paper, that icy blanket of stillness without a discussor is threatening, give one of them the wink to get up and start the discussion and thus obviate having a meeting end in failure which may easily be redeemed by a good active discussion.

11. Take plenty of time in arranging your program and select those to participate who will present the various subjects in an interesting and up-to-date manner and not afflict your meeting by presenting a text-book paper. There is nothing that will put a damper on your meeting as a member who will occupy an hour or more of your time in the reading of a paper composed of text-book extracts.

12. Welcome responsibility. It is the development of power. Do not fear criticism—it is the price you pay for success. Let no man accuse you of being a "has-been." The world listens, sometimes against its will, to the man whose ideas are his own. To lead men you must think for them and think ahead of them.

All these are little things, still it is the combinations or admixtures of these same little things which has made in the past and will in the future make the secretary's work easier and more enjoyable and will do much towards bettering your meetings. The field of the secretary's work is a large one and each district requires measures to correct its own individual difficulties. It is up to the county secretary to solve this problem.

The foregoing thoughts which we have gathered here and there have helped us in our work and they are passed along in the hope that they may stimulate and encourage some secretary to continue the work of their office with renewed energy and effort.

We desire to remind you to use the blanks that were sent you last month when making your remittances to this office. They will facilitate yours as well as our work and serve to keep our records more accurately.

May we not have a report of every meeting that is held by your society? We acknowledge receipt of the notices of your meetings and would like very much to also receive a report of the meeting itself and all that transpired.

Book Notices

DISEASES AND DEFORMITY OF THE FOOT. By John J. Nutt, B.L., M.D., Surgeon in Chief, N. Y. State Hospital for the Care of Crippled and Deformed Children; Surgeon, Sea Breeze Hospital; Orthopedic Surgeon, Willard Parker Hospital, New York. 8 vo., 300 pages, 105 illustrations and plates. Price \$2.75. E. B. Treat & Co., 241 W. 23rd St., New York.

This interesting and practical handbook is prepared for the use of physicians who have not had the opportunity for the thorough study of this neglected subject, and who are desirous of prescribing scientifically and successfully for their patients who consult them regarding their pedal conditions.

Many of the ailments referred to the feet call for treatment that is comparatively simple, and a general practitioner can and should assume the responsibility of preventing deformities, correcting abuses and treating minor diseases of the bones and joints. Chilblains, corns, ingrowing toe-nail, painful heel, excessive sweating, etc., may be cured by simple measures, and these, as well as operations for severer complications, are fully described and illustrated. The volume should receive a splendid reception. Its merits are apparent after a cursory perusal of its pages. It is destined to be of great assistance to the doctor.

CAUSES AND CURES OF CRIME. By Thomas Speed Mosby, member of the American Bar; former Pardon Attorney of Missouri; member of American Institute of Criminal Law and Criminology. Cloth. Illustrated, 354 pp. Price \$2.00. C. V. Mosby Co., St. Louis, Mo.

This book represents the views entertained by one of the leading criminologists of the country on crime and the criminal. It forecasts the aim and intent of those who are working for the new penology, and is based on the premises that crime is in most cases the outcome of a diseased mind.

The author stands for prison reforms, the use of the hospital instead of the penitentiaries, the conservation of man instead of his degradation when crime is first committed.

The subject is one that concerns the doctor, for to him and the economists the people are looking for the solution of the problem. For this reason the study of this volume is urged. It is an excellent exposition of the subject and the author has compiled his data and woven it in an impressive, interesting and instructive manner. The book cannot be read without profit. It merits your serious consideration.

PYORRHEA ALEVOLARIS. By Frederick Hecker, D.D.S., A.M., M.D., St. Louis, Mo. Cloth, 157 pp. Illustrated. Price \$2.00. C. V. Mosby Co., St. Louis, Mo.

Pyorrhea Alveolaris has until recently been looked upon as a local infection of but little importance. With a knowledge of the results secured by investigators as to its bearing upon the general health of the person thus affected, we must now admit that pyorrhea is a disease which must receive consideration and attention from all men of the healing art. The author of this work presents the reader with a rather thorough consideration of pyorrhea, and covers very ably its varieties, pathology and local, constitutional and prophylactic treatment. Bacteriological technic and the making of autogenous vaccines, and their value in the plan of treatment, receive special consideration.

The work, while interesting and recording the author's experience and investigations, cannot be considered as the last word. Much investigation remains to be done; many observations must still be made ere final and definite conclusions can be reached. The volume contains much which every physician should know, and for this reason the work is commended to our readers. The book merits your study and thought.

THE PRACTITIONER'S VISITING LIST FOR 1914. An invaluable pocket-sized book containing memoranda and data important for every physician, and ruled

blanks for recording every detail of practice. The Weekly, Monthly and 30-Patient Perpetual contain 32 pages of data and 160 pages of classified blanks. The 60-Patient Perpetual consists of 256 pages of blanks alone. Each in one wallet-shaped book, bound in flexible leather, with flap and pocket, pencil with rubber, and calendar for two years. Price by mail, postpaid, to any address, \$1.25. Thumb-letter index, 25 cents extra. Descriptive circular showing the several styles sent on request. Lea & Febiger, Publishers, Philadelphia and New York.

Being in its thirtieth year of issue, The Practitioners' Visiting List embodies the results of long experience and study devoted to its development and perfection.

It is issued in four styles to meet the requirements of every practitioner: "Weekly," dated for 30 patients; "Monthly," undated for 120 patients per month; "Perpetual," undated, for 30 patients weekly per year, and "60 Patients," undated, for 60 patients weekly per year.

The text portion of The Practitioner's Visiting List for 1914 has been thoroughly revised and brought up to date. It contains, among other valuable information, a scheme of dentition; tables of weights and measures and comparative scales; instructions for examining the urine; diagnostic table of eruptive fevers; incompatibles, poisons and antidotes; directions for effecting artificial respiration; extensive table of doses; an alphabetical table of diseases and their remedies, and directions for ligation of arteries. The record portion contains ruled blanks of various kinds, adapted for noting all details of practice and professional business.

Printed on fine, tough paper suitable for either pen or pencil, and bound with the utmost strength in handsome grained leather, The Practitioner's Visiting List is sold at the lowest price compatible with perfection in every detail.

Once used it will be considered an essential requisite by every owner. It must be seen to be appreciated.

ANNALS OF SURGERY. A monthly review of Surgical Science and Practice. Edited by Lewis S. Pilcher, M.D., L.L.D., of New York. J. B. Lippincott Co., Philadelphia. Annual Subscription \$5.00 per year.

The December issue of this valuable Journal is a special anesthesia number of 253 pages. The articles bearing upon anesthesia are by Gwathmey, Connell, Parsons, Honan, Cunningham, Janeway, Cotton, Bainbridge, Mereness and McMechan, and cover all that is new in the line of anesthetics, as well as the indications and mode of administration of special forms of anesthetics in various operations. The articles are worthy of the careful perusal and study of every surgeon and anesthetist. The editor and publishers are to be congratulated upon their preparation of such an interesting and instructive symposium upon this important subject.

PROGRESSIVE MEDICINE. Vol. XV, No. 4. A quarterly digest of advances, discoveries and improvements in the medical and surgical sciences. Edited by Hobart A. Hare, M.D. Paper, 441 pages. \$6.00 per annum. Lea & Febiger, Philadelphia.

The contributors to this number are: E. H. Goodman, J. R. Bradford, Charles W. Bonny, J. C. Bloodgood and H. R. M. Landis. The subjects covered are: Diseases of the Digestive Tract and Allied Organs, Diseases of the Kidneys; The Liver, Pancreas and Peritoneum; Genito-Urinary Diseases; Surgery of the Extremities; Shock, Anes-

thesia, Infections, Fractures and Dislocations, and Tumors; Practical Therapeutic Referendum.

Maintaining its high standard, this issue of *Progressive Medicine* closes the XV. volume of this series. One cannot very well do without this digest if he is desirous of remaining conversant with the opinions of authorities upon the advancements that have occurred in the past three months.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures on treatment, medicine, surgery, neurology, pediatrics, obstetrics, gynecology, orthopedics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene and other topics of interest to students and practitioners. Edited by Henry W. Catell, A.M., M.D. Vol. IV, 23rd Series. Price per volume, \$2.00. J. B. Lippincott Company, Philadelphia.

This fourth volume, of a series that long ago demonstrated its merit, maintains the reader's interest from cover to cover. An exhaustive article and study on Traumatic Lipemia and Fatty Embolism by A. S. Warthin of Ann Arbor merits especial mention. This volume contains articles that should appeal to every doctor; to review each one would necessitate too much space. We commend the entire volume and series to our readers.

THE MEDICAL AND SANITARY INSPECTION OF SCHOOLS. By S. W. Newmayer, A.B., M.D., in charge of the Division of Child Hygiene, Bureau of Health, Philadelphia. 12 mo. 318 pages, with 71 engravings, and 14 full page plates. Cloth, \$2.50, net. Lea & Febiger, Publishers, Philadelphia and New York, 1913.

The progress of our civilization, the welfare of the individual, and the general good of the society are contingent upon the efficiency of the education imparted to the children in public schools. In order that the children may receive all the advantages of our modern educational methods, they must not be retarded or handicapped by means of mental or physical ailments or disease. It is the province of our profession to read their mental and physical index and determine how the abnormal child may be assisted to receive the knowledge requisite for his future.

Public health work is no longer limited to the physician and health officer, but it is of great importance to every intelligent person. The sanitation of the school and the health of the pupils, with its widespread application, is acknowledged to be the most important phase of the public health problems of today. The volume by Dr. Newmayer is an authoritative work covering the subject in a clear, brief and practical manner. In this book the health officer can obtain detailed and concise information on efficient organization and administration of school inspection; the physician employed in or contemplating such work will find instructions in methods of diagnosis adapted to school examinations, which differ vastly from college teaching or private practice. The methods which bring the best results, both in the prevention of epidemics, and in the correction of physical defects, are given in detail. Civil service examination questions are appended for those desiring to prepare for competitive examinations.

The nurse and her relations to the work, to the physician, the teacher and the home are given in full. Chapters are devoted to inspections when physicians are not available.

For the teachers and other school authorities there have been included methods of co-operation and such valuable data as, how to teach the fundamental laws of health; definite and accurate infor-

mation on the relation of mentality to physical conditions; new and common-sense views on the non-promoted, backward and mentally deficient child.

The sanitation of the school building and grounds is given full consideration, and a simple and very practical method of recording all information for the benefit of the child and the school is included. Instead of the citation of many examples, a complete system of records is presented. A large subject has been adequately covered in one small volume. The illustrations are not only numerous, but have been chosen to aid the reader.

This is a volume that merits a place in every physician's library. We cannot commend it too strongly. Purchase it at your earliest opportunity.

Miscellany

PULMONOL.

Pulmonol is a consumption "cure" put out by the Pulmonol Chemical Co., New York. As always in the case of consumption "cures," the testimonials issued may be divided into two classes, those who really had tuberculosis and those who did not have it. Investigation of some of the testimonials given some time ago, generally show that those who relied on the nostrum are dead, while those who got well, never had tuberculosis. Examination in the A. M. A. Chemical Laboratory indicated that each fluidounce of Pulmonol was approximately equivalent to 29 gr. of potassium guaiacol sulphate, 10 gr. of sodium benzoate and 1-24 gr. of strychnine sulphate (Jour. A. M. A., Nov 29, 1913, p. 1998.)

PENNYROYAL, TANSY AND OTHER "EMMENAGOGUE OILS."

An examination of the oils of pennyroyal, tansy, savin, rue, thyme, turpentine and of apiol proves that they have no specific or directly stimulating action whatever on the uterine muscles; on the contrary they prohibit the contraction of the uterus and even paralyze it. If these oils exhibit any emmenagogue or abortifacient action whatever, it is due to a general constitutional poisoning or gastro-intestinal irritation and not to any specific action in accord with the intent for which they are sometimes administered. (Jour. A. M. A., Nov. 8, 1913, p. 1725).

SENSITIZED VIRUS-VACCINE.

Besredka asserts that the injection of living germs sensitized in certain ways produces a more substantial immunity and greater production of antibodies than the injection of germs killed by heat or in other ways. In apes sensitized typhoid bacilli gave absolute protection, causing no fever and no reaction, while killed bacilli failed to protect adequately. As a result of these experiments a number of "sensitized virus-vaccines" have been prepared and the anti-rabic vaccine used in France is now a sensitized virus. Before the employment of the sensitized typhoid virus-vaccine can be considered, much evidence must be produced that there is no danger of producing typhoid carriers and that this vaccine gives any better protection than the vaccine now in use. Similar objections hold against other vaccines of this kind and at present the obstacle to the use of such living germs for protective purposes would seem to be quite impassable. (Jour. A. M. A., Nov. 15, 1913, p. 1814).